R E P O R T R E S U M E S

ED 014 161 EC 000 146

THE USE OF PROGRAMED INSTRUCTION WITH DISTURBED STUDENTS, JUNE, 1964 THROUGH MAY, 1965. SECOND PROGRESS REPORT.

BY- ELDRED, DONALD M. AND OTHERS
VERMONT STATE HOSPITAL, WATERBURY

PUB DATE MAY 66

EDRS PRICE MF-$0.~~25~~ 05 HC-~~$2.05~~ 1.57 ~~70P~~ 39 P

DESCRIPTORS- *PROGRAMED INSTRUCTION, *EMOTIONALLY DISTURBED, *SLOW LEARNERS, *UNDERACHIEVERS, *PROGRAMED MATERIALS, CHILDREN, ADOLESCENTS

A THREE YEAR INVESTIGATION WAS UNDERTAKEN TO DETERMINE THE EFFECTS OF PROGRAMED INSTRUCTION ON CHILDREN AND ADOLESCENTS. THE 157 SUBJECTS WERE PUPILS FROM A STATE MENTAL HOSPITAL SCHOOL AND SLOW LEARNERS AND UNDERACHIEVERS IN ONE PAROCHIAL AND TWO PUBLIC HIGH SCHOOLS. ALTHOUGH NOT AVAILABLE FOR ALL SUBJECTS, RESULTS OF THE RORSCHACH TEST, THE GITTINGER PERSONALITY ASSESSMENT SYSTEM, AND PSYCHIATRIC RATINGS WERE USED. NONE OF THE OBJECTIVE MEASURES REVEALED ANY SIGNIFICANT DIFFERENCES BETWEEN THE CONTROL AND THE EXPERIMENTAL GROUPS. POSSIBLE REASONS FOR LACK OF SIGNIFICANT DATA ARE DISCUSSED AND RECOMMENDATIONS AND PRECAUTIONS FOR FUTURE RESEARCH STUDIES ARE MADE. THIRTY PAGES OF ADMINISTRATOR, TEACHER, AND STUDENT COMMENTS AND EVALUATIONS ARE PRESENTED. THE APPENDIX INCLUDES GENERAL INSTRUCTIONS FOR THE USE OF PROGRAMED INSTRUCTION, AN ANNOTATED LISTING OF 20 PROGRAMED MATERIALS, AND A 74 ITEM BIBLIOGRAPHY. (JA)

ED014161

Second Progress Report

National Institute of Mental Health

USPHS Grant No. MH-01076

THE USE OF PROGRAMMED INSTRUCTION WITH DISTURBED STUDENTS

June, 1964 Through May, 1965

EC 000 146

Rupert A. Chittick, M. D., Superintendent
Donald M. Eldred, Project Director
George W. Brooks, M. D., Project Director

VERMONT STATE HOSPITAL
WATERBURY, VERMONT

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

SECOND PROGRESS REPORT

NATIONAL INSTITUTE OF MENTAL HEALTH

USPHS GRANT NO. MH-01076

THE USE OF PROGRAMED INSTRUCTION WITH DISTURBED STUDENTS

JUNE, 1964 THROUGH MAY, 1965

RUPERT A. CHITTICK, M.D., SUPERINTENDENT

DONALD M. ELDRED, PROJECT DIRECTOR

GEORGE W. BROOKS, M.D., PROJECT DIRECTOR

VERMONT STATE HOSPITAL

WATERBURY, VERMONT

ACKNOWLEDGMENTS

***

VERMONT STATE HOSPITAL SUPERINTENDENT
RUPERT A. CHITTICK, M.D.

COLLEGE OF MEDICINE
UNIVERSITY OF VERMONT
THOMAS BOAG, M.D., CHAIRMAN
DEPT. OF PSYCHIATRY

RESEARCH STAFF

PROJECT DIRECTOR- MR. DONALD M. ELDRED, CHIEF CLINICAL PSYCHOLOGIST, VERMONT STATE HOSPITAL
PROJECT CO-DIRECTOR- GEORGE W. BROOKS, M.D., ASST. SUPERINTENDENT, VERMONT STATE HOSPITAL
CONSULTANT- LELON A. WEAVER, PH.D., EXPERIMENTAL PSYCHOLOGIST, UNIVERSITY OF VERMONT
RESEARCH ASSISTANT- MR. MICHAEL V. SULLIVAN, UNIVERSITY OF VERMONT
CLERICAL ASSISTANTS- MISS KARLEEN SANTOR, UNIVERSITY OF VERMONT
MRS. LORRAINE GILMAN, UNIVERSITY OF VERMONT
MRS. JUDITH DOUGLAS, VERMONT STATE HOSPITAL

VERMONT STATE HOSPITAL SCHOOL - WATERBURY, VERMONT

PRINCIPAL AND SECONDARY TEACHER- MR. HOMER S. MURRAY
ELEMENTARY TEACHER- MISS ESTHER WHEELER

WATERBURY HIGH SCHOOL - WATERBURY, VERMONT

SCHOOL SUPERINTENDENT- MR. THEODORE WHALEN
PRINCIPAL- MR. DONALD JAMIESON
EXPERIMENTAL GROUP TEACHERS- MISS THERESA SABOURIN, ENGLISH AND MATHEMATICS
MR. MICHAEL CRONIN, SCIENCE
CONTROL GROUP TEACHERS- MRS. ELSIE TADEJEWSKI, ENGLISH
MR. STEVEN DORAN, MATHEMATICS
MR. MICHAEL CRONIN, SCIENCE
THE EXPERIMENTAL AND CONTROL GROUPS WERE COMBINED FOR THE CIVICS COURSE WHICH WAS TAUGHT BY MISS SABOURIN.

RICE MEMORIAL HIGH SCHOOL - BURLINGTON, VERMONT

PRINCIPAL- REVEREND HAROLD T. ROSS
DIRECTOR OF GUIDANCE- REVEREND GRAYDON ROBINSON
EXPERIMENTAL GROUP TEACHERS- SISTER MARY PASCHAL, REMEDIAL READING AND ENGLISH
SISTER MARY ALBERT, GENERAL SCIENCE AND BASIC MATHEMATICS
CONTROL GROUP TEACHERS- SISTER JOHN THOMAS, ENGLISH 9
MR. ROBERT NOONAN, MATH 9
MR. EDWARD KENNEDY, GENERAL SCIENCE
SISTER ANNE AIMEE, SACRED SCRIPTURE

THE CHILDREN'S CENTER - BURLINGTON, VERMONT

DIRECTOR- MR. JAMES COTTER
EDUCATIONAL DIRECTOR- MR. EDWARD FALLON

IN EXPRESSING GRATITUDE AND RECOGNITION, THE MOST IMPORTANT GROUP, THOSE WHO PUT UP WITH THE MOST, AND WHO WORKED THE HARDEST, SHOULD NOT BE NEGLECTED. ALMOST TO THE CHILD, THE STUDENTS PARTICIPATING IN THE RESEARCH PROJECT RESPONDED IN A MOST CREDITABLE MANNER.

TABLE OF CONTENTS

SECTION	TITLE	PAGE
	ABSTRACT	-
I	DEVELOPMENTS AND PROBLEMS OLD & NEW	1-1
II	RESULTS	2-1
III	TEACHERS' COMMENTS AFTER USING PROGRAMED INSTRUCTION	3-1
IV	COMMENTS	4-1
APPENDIX A	SAMPLE OF TEST RESULTS	A-1
APPENDIX B	GENERAL INSTRUCTIONS TO TEACHERS FOR THE USE OF PROGRAMED INSTRUCTION	B-1

ABSTRACT

THIS REPORT DESCRIBES THE WORK ACCOMPLISHED DURING THE SECOND YEAR OF A THREE YEAR RESEARCH GRANT, USPHS No. 1-R11-MH-01076, TITLED, "THE USE OF PROGRAMED INSTRUCTION WITH DISTURBED STUDENTS."

ORIGINALLY THE MAIN PURPOSE OF THIS RESEARCH PROJECT WAS TO STUDY THE EFFECTS OF PROGRAMED INSTRUCTION UPON THE ACADEMIC, THERAPEUTIC, AND SOCIAL PROGRESS OF CHILDREN AND ADOLESCENTS IN A STATE MENTAL HOSPITAL SCHOOL. THE STUDY WAS EXPANDED TO INCLUDE SLOW LEARNERS OR 'UNDER ACHIEVERS' IN A PUBLIC HIGH SCHOOL, A PAROCHIAL HIGH SCHOOL AND MENTALLY DISTURBED CHILDREN IN A PRIVATE RESIDENTIAL INSTITUTION.

SINCE WE WERE INTERESTED IN THE EFFECTS OF PROGRAMED INSTRUCTION ON TEACHERS AS WELL AS STUDENTS, THIS REPORT INCLUDES TEACHER REACTIONS TO THIS PERSONALIZED, INDIVIDUALIZED METHOD OF INSTRUCTION.

IN THIS SECOND PROGRESS REPORT WE HAVE MADE ADDITIONAL COMMENTS ABOUT OUR DIFFICULTIES IN OBTAINING TEST DATA WHICH SHOW STATISTICALLY DIFFERENT RESULTS BETWEEN THE CONTROL GROUPS (CONVENTIONAL TEACHING MATERIALS) AND THE EXPERIMENTAL GROUPS (PROGRAMED MATERIALS).

HOWEVER, WE WOULD LIKE TO POINT OUT THAT SEVEN OF TWENTY-SIX STUDENTS IN THE LOWEST SECTION OF THE FRESHMAN CLASS IN TWO PUBLIC HIGH SCHOOLS SHOWED A YEAR OR MORE IMPROVEMENT IN THEIR GRADE LEVEL IN BASIC SUBJECTS. FOURTEEN OF THESE TWENTY-SIX STUDENTS SHOWED A YEAR OR MORE IMPROVEMENT IN THEIR GRADE LEVEL PLACEMENT ON THE VERBAL PART OF THE LORGE-THORNDIKE INTELLIGENCE TEST. ALL OF THESE STUDENTS WERE IN THE GROUP USING PROGRAMED INSTRUCTION.

PERHAPS EVEN MORE SIGNIFICANT IS THE CONTINUED GROWTH IN THE ENTHUSIASM OF OUR TEACHERS IN THE SCHOOL HERE AT THE VERMONT STATE HOSPITAL. THERE IS NO QUESTION ABOUT THEIR STRONG CONVICTION THAT PROGRAMED INSTRUCTION PROPERLY USED WITH THE STUDENTS SUITED FOR THIS TYPE OF INSTRUCTION HAS MANY ADVANTAGES. THEIR ATTITUDES AND BELIEFS ARE SHARED BY PUBLIC SCHOOL TEACHERS AS THESE TEACHERS GAIN ADDITIONAL EXPERIENCE IN USING PROGRAMED AIDS FOR PERSONALIZED EDUCATION.

BECAUSE WE ARE BECOMING INCREASINGLY CONVINCED THAT MORE ATTENTION SHOULD BE GIVEN TO THE EVALUATIONS OF QUALIFIED OBSERVERS WE HAVE INCLUDED MORE COMMENTS MADE BY THE TEACHERS INVOLVED IN THIS PROJECT.

FINALLY, BECAUSE OF OUR EXPANDED CONTACTS WITH PUBLIC SCHOOL TEACHERS WE HAVE BECOME ACUTELY AWARE OF THE NEED FOR EXTENSIVE COMMUNICATION WITH THESE TEACHERS AND TO PROVIDE WRITTEN INSTRUCTIONS AS TO HOW TO USE PROGRAMED INSTRUCTION. HENCE, WE HAVE INCLUDED THE INSTRUCTIONS GIVEN TO THESE TEACHERS.

SECTION I - DEVELOPMENTS AND PROBLEMS OLD AND NEW

THE BACKGROUND OF THIS PROJECT, OUR HYPOTHESES, AND THE RESEARCH DESIGN AND METHODS HAVE BEEN DESCRIBED IN DETAIL IN OUR FIRST PROGRESS REPORT AND WILL NOT BE REPEATED IN THIS ACCOUNT OF THE SECOND YEAR OF THE PROJECT.

THE WIDESPREAD INTEREST IN THIS USE OF PROGRAMED AIDS TO INDIVIDUALIZED, OR PERSONALIZED, EDUCATION TO AID DISTURBED STUDENTS AND STUDENTS WHO HAVE LEARNING PROBLEMS IS DEMONSTRATED BY THE DISTRIBUTION OF MORE THAN EIGHT HUNDRED COPIES OF OUR FIRST REPORT. REQUESTS FOR THE REPORT HAVE BEEN RECEIVED FROM MOST SECTIONS OF THE UNITED STATES AND FROM A NUMBER OF FOREIGN COUNTRIES.

A SUBSTANTIAL PORTION OF THE REQUESTS FOR OUR REPORT HAVE COME FROM PUBLIC SCHOOL SYSTEMS. MOREOVER, AN INCREASING NUMBER OF TEACHERS AND SCHOOL ADMINISTRATORS ARE COMING TO OUR HOSPITAL TO OBSERVE OUR USE OF PROGRAMED INSTRUCTION AND TO ASK FOR ADVICE. WE HAVE HAD AN INCREASING NUMBER OF REQUESTS FOR TALKS TO BE GIVEN TO GROUPS OF TEACHERS, PTA'S, AND OTHER COMMUNITY GROUPS. WE BELIEVE THAT THIS NEW BRIDGE BETWEEN THE HOSPITAL AND THE COMMUNITY IS ONE OF THE MOST IMPORTANT OUTCOMES OF THIS PROJECT. INDEED, WE BELIEVE THAT THESE CONTACTS PLUS THE GROWING USE OF PROGRAMED INSTRUCTION IN PUBLIC SCHOOLS CONSTITUTE AN IMPORTANT ASPECT OF PREVENTIVE WORK IN THE FIELD OF MENTAL ILLNESS.

HENCE, WE ARE GLAD TO REPORT THAT DURING THIS SECOND YEAR OF OUR PROJECT THE STUDENTS IN THE LOWER SECTIONS OF THE FRESHMAN CLASS AT RICE MEMORIAL HIGH SCHOOL, THE LARGEST PAROCHIAL HIGH SCHOOL IN THE STATE, HAVE BEEN INCLUDED. WATERBURY HIGH SCHOOL CONTINUED FOR A SECOND YEAR, THOUGH WE WERE UNABLE TO INCLUDE THE SOPHOMORES, AS PLANNED ORIGINALLY. HENCE, WE WERE UNABLE TO PROVIDE PROGRAMED INSTRUCTION TO THE ORIGINAL CONTROL GROUP AND COMPARE THE RESULTS. HOWEVER, WE AGAIN HAD THE BOTTOM GROUPS OF THE FRESHMAN CLASS AT WATERBURY HIGH SCHOOL.

WE FURTHER EXPANDED OUR WORK BY LOANING PROGRAMED MATERIALS TO SEVERAL SCHOOLS WHICH HAD STUDENTS WHO WERE MAKING LITTLE PROGRESS WITH THE USUAL INSTRUCTION PROVIDED. IN ONE INSTANCE THERE WERE ELEVEN OF TWENTY-NINE STUDENTS IN A SEVENTH GRADE ARITHMETIC CLASS WHO WERE MAKING LITTLE PROGRESS ACADEMICALLY THOUGH THEY WERE ACHIEVING EXCELLENT RESULTS AS BEHAVIOR PROBLEMS. THE PROGRAMED AIDS ENABLED THESE STUDENTS TO SUCCEED TO AN EXTENT THAT THEY BECAME HAPPY INSTEAD OF DISGRUNTLED AND FRUSTRATED, AND THE TEACHER EXPERIENCED A SIMILAR CHANGE OF FEELING. THE PRINCIPAL REPORTED TO THE SCHOOL BOARD THAT FOR THE FIRST TIME HE HAD FOUND MATERIAL SUITED TO THIS TYPE OF STUDENT.

IN ANOTHER INSTANCE THERE WAS A BOY WHOSE CHRONOLOGICAL AND PHYSICAL AGE AND HIS INTERESTS INDICATED THAT HE SHOULD BE IN THE SEVENTH GRADE WITH HIS PEERS. HOWEVER, HIS ACADEMIC ABILITY WAS AT THE FIFTH AND SIXTH GRADE LEVEL. USING PROGRAMED INSTRUCTION ENABLED HIM TO BE IN THE SEVENTH GRADE AND YET SUCCEED ACADEMICALLY.

IN SHORT, DURING THE PAST YEAR WE HAVE BEGUN AN INVESTIGATION OF THE USE OF PROGRAMED INSTRUCTION WITH A SMALL NUMBER OF STUDENTS WHO HAD

SPECIAL PROBLEMS. THESE PROBLEMS COULD NOT BE CARED FOR ADEQUATELY BY THE TEACHER WHOSE TIME AND ATTENTION WERE REQUIRED BY A REASONABLY LARGE CLASS OF AVERAGE STUDENTS. PROGRAMED INSTRUCTION HAS NOT ONLY PROVIDED LEARNING MATERIAL WHICH HAS BEEN CAREFULLY ORGANIZED IN SMALL STEPS; IT HAS REALLY PROVIDED ONE OR MORE HELPING TEACHERS, OR TUTORS, TO AID THE CLASSROOM TEACHER. NEEDLESS TO SAY, BOTH TEACHER AND STUDENTS HAVE BEEN HAPPIER AND ABLE TO HAVE A BETTER RELATIONSHIP WITH EACH OTHER.

AS WE HAVE EXPANDED OUR WORK OUTSIDE OF THE HOSPITAL SCHOOL, A NUMBER OF EXPERIENCES HAVE UNDERLINED THE CRUCIAL IMPORTANCE OF ADEQUATE AND EFFECTIVE COMMUNICATION WITH TEACHERS WHO HAVE HAD NO EXPERIENCE WITH PROGRAMED MATERIALS. ONE APPROACH TO THIS PROBLEM HAS BEEN THE PREPARATION OF INSTRUCTIONS FOR USE BY THESE TEACHERS. THESE INSTRUCTIONS ARE INCLUDED IN THIS REPORT AS APPENDIX B.

HOWEVER, WE FOUND THAT EITHER SOME OF THE TEACHERS DID NOT READ THESE INSTRUCTIONS OR THE INSTRUCTIONS WERE NOT WRITTEN WITH SUFFICIENT CLARITY. FOR EXAMPLE, IN OUR FIRST REPORT AND AGAIN IN THESE INSTRUCTIONS WE HAVE STRESSED THE IMPORTANCE OF TRYING SEVERAL TYPES OF PROGRAMED MATERIALS IF THE TYPE PROVIDED ORIGINALLY DID NOT ACHIEVE SATISFACTORY RESULTS WITH SOME INDIVIDUALS. IN SPITE OF THIS ADVICE, WE HAVE HAD SEVERAL TEACHERS WHO HAVE SEEMED TO CLING TO THE IDEA THAT ALL THE STUDENTS IN ANY GIVEN CLASS HAD TO USE THE SAME TYPE OF PROGRAMED INSTRUCTION.

MOREOVER, IN SPITE OF WHAT WE THOUGHT WAS A STRONG EMPHASIS UPON THE NECESSITY OF AVOIDING A STEADY DIET OF PROGRAMED INSTRUCTION, THERE WERE TEACHERS WHO OFFERED HARDLY ANYTHING EXCEPT THE PROGRAMED MATERIALS WHICH WE HAD PROVIDED. OUR STATEMENTS THAT PROGRAMED MATERIALS ARE AIDS TO PERSONALIZED INSTRUCTION AND SHOULD BE SUPPLEMENTED BY OTHER AIDS WENT UNHEEDED. IN SOME INSTANCES VERY FEW, IF ANY, EXPERIMENTS WERE PROVIDED TO ACCOMPANY THE PROGRAMED GENERAL SCIENCE.

ONE TEACHER, HOWEVER, DEVELOPED A VERY GOOD SERIES OF EXPERIMENTS TO BE DONE AT THE END OF EACH UNIT IN THE PROGRAMED COURSE. NO STUDENT WAS ASKED TO UNDERTAKE AN EXPERIMENT UNTIL HE HAD REACHED THE PROPER PLACE IN HIS PROGRAMED WORK. EVENTUALLY, THE STUDENTS WHO PROGRESSED MORE RAPIDLY WERE USED AS HELPERS AND SUPERVISED THE SLOWER STUDENTS WHEN THEY DID THEIR EXPERIMENTS. IT WAS THE IMPRESSION OF THE TEACHER AND OBSERVERS THAT ALL THE STUDENTS BENEFITED FROM THIS PROCEDURE.

DURING THE PAST YEAR, TOO, WE HAVE HAD INSTANCES IN WHICH STUDENTS BECAME BORED WITH UNINTERRUPTED WORK ON PUNCTUATION OR GRAMMAR OR SPELLING. THE TEACHER DID NOT PROVIDE A BREAK BY TURNING TO SOME STORIES AND SOME WORK IN LITERATURE. IN SOME INSTANCES WE LEARNED, TOO LATE, THAT THE TEACHER DID NOT THINK SUCH VARIETY AND FLEXIBILITY WERE PERMITTED.

BY THIS TIME IT SHOULD BE EVIDENT THAT THE PROVISION OF WRITTEN INSTRUCTIONS WAS NOT SUFFICIENT. WE URGED THE TEACHERS IN THE PUBLIC SCHOOLS AND IN THE PRIVATE, RESIDENTIAL TREATMENT CENTER TO VISIT THE TEACHERS IN OUR HOSPITAL SCHOOL AND OBSERVE THE METHODS WHICH THEY USED TO MAKE PROGRAMED MATERIALS SERVE AS PROGRAMED AIDS TO PERSONALIZED EDUCATION. BUT FEW OF THE PUBLIC SCHOOL TEACHERS PARTICIPATING IN OUR PROJECT DURING THE PAST YEAR HAVE ACCEPTED OUR INVITATION. AT THE SAME TIME AN INCREASING NUMBER OF OTHER TEACHERS <u>HAVE</u> VISITED US TO OBSERVE OUR USE OF PROGRAMED AIDS.

WE ENCOUNTERED SIMILAR RELUCTANCE TO HAVE MEETINGS WITH THE TEACHERS AT VERMONT STATE HOSPITAL AND THOSE IN CHARGE OF THIS PROJECT. DURING THE FIRST YEAR WE WERE RATHER INSISTENT UPON MONTHLY OR BIMONTHLY MEETINGS WITH THE PRINCIPAL AND TEACHERS USING PROGRAMED MATERIALS IN THE PUBLIC HIGH SCHOOLS PARTICIPATING IN THE PROJECT. IT WAS OBVIOUS THAT THESE BUSY INDIVIDUALS FELT SOME RESENTMENT ABOUT THIS EXTRA DEMAND UPON THEIR TIME. CONSEQUENTLY, DURING THIS SECOND YEAR WE SUGGESTED SUCH MEETINGS, REPEATEDLY STATED OUR WILLINGNESS TO MEET AT ANY TIME THAT WE COULD BE OF HELP, BUT LEFT THE FREQUENCY OF THE MEETINGS TO THE PARTICIPATING SCHOOLS. ONE SCHOOL REQUESTED ONE MEETING DURING THE ENTIRE YEAR. NO MEETINGS WERE REQUESTED BY THE OTHER TWO PARTICIPATING SCHOOLS! YET THE TEACHER REACTIONS FOUND IN SECTION III OF THIS REPORT CONTAIN REPEATED COMMENTS ABOUT THE INADEQUATE ASSISTANCE AND INFORMATION RECEIVED! THE PROBLEM OF COMMUNICATION WAS MADE STILL WORSE BY THE FACT THAT THE RESEARCH ASSISTANT, WHO WAS SUPPOSED TO VISIT EACH SCHOOL AT LEAST ONCE A WEEK, WAS ILL FROM TIME TO TIME THROUGHOUT THE YEAR.

MOREOVER, AS WE LOOK BACK UPON THE YEAR AND WHAT WE HAVE BEEN TOLD AT THE END OF THAT YEAR BY THE PRINCIPALS AND TEACHERS OF THE PUBLIC SCHOOLS, IT SEEMS TO BE INCREASINGLY CLEAR THAT IT IS OF THE UTMOST IMPORTANCE THAT THE RESEARCH ASSISTANT KNOW WHAT HE KNOWS AND WHAT HE DOESN'T KNOW.

FOR EXAMPLE, IT IS ESSENTIAL THAT IF THIS PRINCIPAL MEANS OF COMMUNICATION BETWEEN THE PROJECT STAFF AND ADMINISTRATORS AND TEACHERS OF PARTICIPATING SCHOOLS IS TO FUNCTION SUCCESSFULL, HE MUST NOT ATTEMPT TO ANSWER QUESTIONS ABOUT TEACHING METHODS AND PROCEDURES UNLESS HE HAS HAD A REASONABLE AMOUNT OF SUCCESSFUL EXPERIENCE AS A TEACHER. IN SHORT, HE MUST KNOW WHAT QUESTIONS HE IS QUALIFIED TO ANSWER AND WHAT QUESTIONS HE SHOULD TAKE BACK TO THOSE WHO HAVE THE BACKGROUND AND EXPERIENCE TO PROVIDE SOUND ANSWERS.

IT IS ALSO EXTREMELY IMPORTANT THAT THIS COORDINATOR AND MEANS OF COMMUNICATION POSSESS MATURITY AND OBJECTIVITY WHICH WILL PERMIT OBJECTIVE REPORTS ABOUT WHAT IS HAPPENING OUTSIDE OF THE CENTER OF THE PROJECT. IF THE OBSERVER AND DATA COLLECTOR IS THE TYPE THAT EITHER CANNOT RECOGNIZE DEVELOPING PROBLEMS OR PREFERS TO HIDE HIS HEAD IN THE SAND AND BRING BACK ONLY "ROSY" REPORTS AS EVIDENCE THAT HE IS DOING A GOOD JOB AND THAT THE PROJECT IS PROGRESSING SATISFACTORILY, A BITTER DAY OF RECKONING IS SURE TO COME.

WE HAVE HAD FEW PROBLEMS CONCERNING THE DAILY CLASSROOM PROCEDURES AND USE OF PROGRAMED MATERIALS AT THE VERMONT STATE HOSPITAL SCHOOL WHERE IT HAS BEEN POSSIBLE TO MAINTAIN ADEQUATE CONTACT AND EXCHANGE OF INFORMATION AND PROBLEMS. OUR BIGGEST PROBLEMS HAVE OCCURRED WHERE WE DID NOT HAVE SUCH CLOSE RELATIONSHIPS AND WHERE WE HAD INADEQUATE AUTHORITY, CONTROL, AND COMMUNICATION.

EVEN HERE AT THE VERMONT STATE HOSPITAL THE PAST YEAR HAS EXPOSED ANOTHER TYPE OF TROUBLE WHICH CAN DEVELOP IF THOSE CONDUCTING A PROJECT SUCH AS THIS DO NOT HAVE ADEQUATE CONTROL AND AUTHORITY. FOR EXAMPLE, DURING THE PAST YEAR THERE HAVE BEEN MANY CHANGES IN THE DAILY LIVES OF THE HOSPITAL STUDENTS. THIS IS NOT TO ARGUE THE DESIRABILITY OR UNDESIRABILITY OF THESE NUMEROUS CHANGES AND NEW VARIABLES. HOWEVER, WE BELIEVE THAT MOST INDIVIDUALS WHO HAVE HAD A REASONABLE AMOUNT OF EXPERIENCE

WORKING WITH EMOTIONALLY DISTURBED CHILDREN WILL AGREE THAT RATHER FREQUENT CHANGES IN THE LIVES OF THESE YOUNG PEOPLE ARE ESPECIALLY UPSETTING AND DISTURBING. THIS UPSET AND DISTURBANCE, IN TURN, CAN HAVE ADVERSE EFFECTS UPON ACADEMIC ACHIEVEMENT EVEN IF PROGRAMED AIDS ARE USED.

DURING THE PAST YEAR THE AVERAGE LENGTH OF TIME SPENT IN THE HOSPITAL SCHOOL HAS DECREASED MARKEDLY. IN SHORT, THOSE OF US WHO HAVE HAD AN OPPORTUNITY TO OBSERVE WHAT HAPPENED WHEN STUDENTS HAD A LONGER TIME TO BENEFIT FROM THE HYPOTHESIZED BENEFITS OF PROGRAMED INSTRUCTION BELIEVE STRONGLY THAT THE MUCH SHORTER PERIOD OF HOSPITALIZATION NOW PREVALENT PREVENTS, OR AT LEAST HAMPERS, THE DEMONSTRATION OF THE OPTIMUM BENEFITS OF PROGRAMED INSTRUCTION.

WE HAVE ALWAYS TAKEN THE POSITION THAT NO CHILD WILL BE SACRIFICED FOR THE SAKE OF RESEARCH. AT THE SAME TIME, WE ARE POINTING OUT WHAT HAPPENS WHEN MANY CHANGES OCCUR, WHEN MANY NEW VARIABLES ARE INTRODUCED INTO A RESEARCH PROJECT, AND WHEN THOSE CONDUCTING THE RESEARCH HAVE LITTLE AUTHORITY OR CONTROL OF SUCH CHANGES.

IN OUR FIRST REPORT, WE COMMENTED THAT RESULTS AT THE END OF A YEAR INDICATED THAT PROGRAMED AIDS ARE NOT THE BEST MEDIUM OF INSTRUCTION FOR ALL STUDENTS. WE EXPRESSED THE BELIEF THAT WE HAD MADE A BEGINNING IN ASCERTAINING WHICH STUDENTS BENEFIT FROM PROGRAMED AIDS AND WHICH ARE HELPED MORE BY MORE CONVENTIONAL MATERIALS. THE SAMPLE TEST RESULTS IN APPENDIX A PRESENT ADDITIONAL EVIDENCE THAT SOME STUDENTS HAVE MADE SIGNIFICANT IMPROVEMENT USING PROGRAMED MATERIALS. OTHER STUDENTS HAVE MADE EQUALLY GREAT IMPROVEMENT USING CONVENTIONAL MEDIA OF INSTRUCTION. OUR EFFORTS HAVE CONTINUED TO FIND SOME METHOD OF PREDICTING IN ADVANCE WHICH METHOD OF INSTRUCTION IS BEST FOR ANY GIVEN STUDENT. HOWEVER, WE HAVE NOT YET USED THIS METHOD WITH PUBLIC SCHOOL STUDENTS BECAUSE WE HAVE BEEN UNABLE TO OBTAIN WECHSLER INTELLIGENCE TEST RESULTS FOR STUDENTS NOT IN OUR HOSPITAL. UNTIL WE CAN EXTEND OUR METHODS TO INCLUDE SUCCESSFUL PREDICTION FOR STUDENTS IN PUBLIC SCHOOLS, WE CONSIDER IT PREMATURE TO DESCRIBE THE PROCEDURE USED HERE IN THE HOSPITAL. HOWEVER, WE HAVE BEEN GRATIFIED WITH THE ACCURACY OF PREDICTION AS TO WHICH TYPE OF INSTRUCTION TO PROVIDE FOR THE STUDENTS IN OUR HOSPITAL SCHOOL. INDEED, IT SEEMS POSSIBLE TO PREDICT WHICH STUDENTS WOULD PROFIT BY HAVING PROGRAMED INSTRUCTION BEGIN IN THE ELEMENTARY GRADES AND WHICH WOULD BE HELPED MORE IF PROGRAMED INSTRUCTION WERE POSTPONED UNTIL HIGH SCHOOL. WE HOPE, TOO, THAT THIS METHOD OF SELECTING STUDENTS FOR PROGRAMED INSTRUCTION CAN ALSO BE UTILIZED TO REDUCE THE AMOUNT OF TRIAL AND EFFORT NOW REQUIRED TOO OFTEN TO FIND THE RIGHT TYPE OF PROGRAMED MATERIAL FOR ANY GIVEN STUDENT. DURING THE PAST YEAR WE HAVE HAD LIMITED SUCCESS IN MAKING THIS KIND OF PREDICTION.

HOWEVER, IT HAS NOT SEEMED DESIRABLE DURING THIS THIRD YEAR OF OUR PROJECT, WHILE WE STILL HAVE A RELATIVELY SMALL N AND WHILE THE PARTICIPATING SCHOOLS ARE STILL CHANGING, TO CHANGE FROM THE RANDOM ASSIGNMENT OF STUDENTS TO CONTROL AND EXPERIMENTAL GROUP. WE HAVE APPLIED FOR ANOTHER GRANT TO PERMIT TESTING THESE METHODS OF SELECTING THE MEDIUM AND TYPE OF INSTRUCTION THAT WILL BENEFIT MOST ANY GIVEN STUDENT.

IN THE CHAPTER ON RESULTS WE HAVE DISCUSSED THE FAILURE OF CERTAIN EVALUATIVE MEASURES USED LAST YEAR AND DURING THIS SECOND YEAR OF OUR PROJECT TO MEASURE VARIOUS TYPES OF PROGRESS AND IMPROVEMENT AND TO TEST THE VALIDITY OF THE HYPOTHESES MADE AT THE BEGINNING OF THIS PROJECT.

AT THE END OF TWO YEARS IT SEEMS TO US QUITE OBVIOUS THAT SOME OF THESE EVALUATIVE MEASURES HAVE LITTLE, IF ANY, USEFULNESS. HENCE, WE ARE DROPPING THOSE DURING THE THIRD YEAR OF THIS INVESTIGATION.

IN OUR FIRST PROGRESS REPORT, WE MENTIONED THE LACK OF SUITABLE PROGRAMED MATERIALS FOR THE LOWER GRADE AND READING LEVELS AND THE SCARCITY, OR TOTAL ABSENCE, OF SUITABLE MATERIALS AT ALL GRADE AND READING LEVELS IN CERTAIN SUBJECTS. THIS PROBLEM DOES NOT SEEM TO HAVE BEEN ALLEVIATED APPRECIABLY DURING THE PAST YEAR. MANY PROGRAMED MATERIALS ARE OFFERED, BUT TOO MANY ARE NOT SUITABLE.

THIS LEADS TO ANOTHER PROBLEM WHICH HAS BEEN OF INCREASING CONCERN TO US - THE READING DISABILITY FOUND IN MANY STUDENTS WHICH MAKES IT DIFFICULT TO FIND ANY SUITABLE INSTRUCTIONAL MATERIALS, PROGRAMED OR NON-PROGRAMED. THIS READING PROBLEM HAS LED US TO INVESTIGATE A NUMBER OF DIFFERENT METHODS WHICH HAVE SEEMED TO OFFER SOME DEGREE OF ASSISTANCE WITH THIS PROBLEM. OUR SECOND YEAR OF EXPERIENCE HAS MADE US INCREASINGLY AWARE OF THE NUMBER OF APPROACHES TO THE SOLUTION OF READING DIFFICULTIES WHICH SEEM TO ASSUME THAT ALL, OR MOST, READING PROBLEMS STEM FROM ONE CAUSE AND CAN BE REMEDIED BY THE ONE METHOD ADVOCATED BY THIS AUTHORITY OR THAT AUTHORITY.

MORE AND MORE WE BELIEVE THAT READING DISABILITY STEMS FROM MANY CAUSES AND THAT THE REMEDY LIES IN VARIOUS COMBINATIONS OF APPROACHES. WE BELIEVE THAT IT IS POSSIBLE TO DEVELOP A BATTERY OF TESTS WHICH WOULD PERMIT DIVIDING A GROUP OF NON-READERS OR POOR READERS INTO A NUMBER OF SUB-GROUPS. THE REMEDIAL METHOD COULD THEN BE PRESCRIBED BY CONSIDERING THE SUB GROUP OR GROUP IN WHICH A GIVEN CHILD MAY BE. IF OUR APPLICATION FOR AN ADDITIONAL GRANT TO CONTINUE OUR PRESENT INVESTIGATION IS APPROVED, WE PROPOSE TO EXPAND OUR STUDY TO INCLUDE THIS ASPECT OF LEARNING PROBLEMS.

AS AN EXAMPLE OF A PROBLEM AREA WHICH HAMPERS THE RESULTS OBTAINED EVEN BY PROGRAMED INSTRUCTION, WE MENTION THE DEFICIENCIES OF MOTOR PERCEPTION, VISUAL PERCEPTION, AND AUDITORY DISCRIMINATION WHICH WE ARE FINDING EXIST UNSUSPECTED IN MANY OF THE STUDENTS WITH WHOM WE HAVE NOT HAD THE SUCCESS EXPECTED. DURING THIS SECOND YEAR OF OUR PRESENT INVESTIGATION, OUR OBSERVATIONS AND TEST RESULTS MAKE US MORE AND MORE CONVINCED THAT MANY STUDENTS WHO DO POORLY IN ARITHMETIC AND "GENERAL MATH" DO SO BECAUSE OF THE SAME PERCEPTUAL DEFICIENCIES WHICH CAUSE READING PROBLEMS. THUS OUR ADDITIONAL EXPERIENCE IN ENDEAVORING TO PERSONALIZE EDUCATION THROUGH THE USE OF PROGRAMED MATERIALS HAS MADE US BELIEVE MORE AND MORE THAT THE USEFULNESS OF PROGRAMED INSTRUCTION OR OF ANY OTHER MEDIUM OF INSTRUCTION WILL BE DISTINCTLY HAMPERED UNTIL THESE PERCEPTUAL DEFICIENCIES HAVE BEEN ELIMINATED, OR AT LEAST DECREASED, BY REMEDIAL METHODS AVAILABLE OR TO BE DEVELOPED.

WE HAVE BEEN INTERESTED, TOO, IN THE SUCCESSFUL USE OF I/T/A WITH EMOTIONALLY DISTURBED CHILDREN AT THE ROCKLAND STATE HOSPITAL IN ORANGEBURG, NEW YORK, UNDER THE SUPERVISION OF DR. GORDON BARCLAY. WE HAVE NOT USED THIS AS YET, BUT DR. BARCLAY'S REPORTS INDICATE THAT WE SHOULD ADD THIS TO OUR USE OF PROGRAMED INSTRUCTION.

VERY ENCOURAGING RESULTS ARE ALSO REPORTED BY THOSE WHO HAVE USED THE NEW READING PROGRAM, READING IN HIGH GEAR, DEVELOPED BY DR. MYRON WOOLMAN. THESE DEVELOPMENTS DURING THE PAST YEAR HAVE CAUSED US TO

REALIZE THAT THE PROBLEM WE BEGAN TO INVESTIGATE IS NOT AS CLEAR-CUT AS WE HAD BELIEVED AND THAT THERE ARE NUMEROUS FACETS WHICH NEED TO BE INCLUDED IN A STUDY SUCH AS OURS. HOWEVER, IT SEEMS TO BE DESIRABLE TO CONCLUDE OUR PRESENT PROJECT ALONG THE LINES ORIGINALLY PROPOSED AND SEE WHETHER THE RESULTS ARE MODIFIED AS OUR N INCREASES, AS BETTER COMMUNICATION IS ESTABLISHED BETWEEN ALL PARTICIPANTS, AND AS ADDITIONAL CONTROL IS ESTABLISHED OVER THE MANY VARIABLES DESCRIBED EARLIER.

SECTION II - RESULTS

THE FIRST PROGRESS REPORT, COVERING JUNE, 1963 THROUGH MAY, 1964, INDICATED THAT BECAUSE OF THE SMALL NUMBER OF STUDENTS PARTICIPATING IN THE PROGRAM, ANY SIGNIFICANT RESULTS MIGHT PROVE TO BE ERRONEOUS WERE A LARGER N USED. ALSO IT WAS HOPED THAT WITH THE PRINTING OF THIS, THE SECOND PROGRESS REPORT, WE COULD JUSTIFY A STATISTICAL ANALYSIS OF THE DATA. UNFORTUNATELY, WE STILL FEEL THAT SUCH AN ANALYSIS IS UNTENABLE. THE REASONS ARE NUMEROUS, BUT THOSE WHICH ARE LISTED CONSTITUTE OUR MAJOR PROBLEMS.

MANY STUDENTS AT THE JOSEPHINE BAIRD CHILDREN'S CENTER ENROLLED AND DEPARTED FROM THE CENTER'S SCHOOL PROGRAM BEFORE WE COULD TEST THEM AT THE BEGINNING AND END OF THE YEAR. CONSEQUENTLY, WE DO NOT HAVE SCORES FOR MOST OF THEIR CHILDREN, INASMUCH AS OUR PRIMARY CRITERION FOR THE INCLUSION OF A SUBJECT IN THE REPORT WAS THAT HE HAVE A PAIR OF SCORES INDICATING DEVELOPMENTAL COMPARISONS RATHER THAN ABSOLUTE COMPARISONS.

THE SAME PROBLEM OCCURRED AT THE VERMONT STATE HOSPITAL. STILL OTHER PROBLEMS EXISTED AT THE HOSPITAL. WE TRIED TO HAVE EACH CHILD IN THE EXPERIMENTAL (PROGRAMED INSTRUCTION) GROUP FOR A SEMESTER AND IN THE CONTROL (CONVENTIONAL METHODS) GROUP FOR A SEMESTER. HOWEVER, WE CONSIDER THE CHILD'S WELFARE TO BE OUR PRIMARY CONSIDERATION. IF A YOUNGSTER WAS DOING WELL USING EITHER METHOD AND IT WAS FELT THAT SWITCHING HIM AT MID-YEAR WOULD BE HARMFUL TO HIS PROGRESS THEN HE REMAINED IN ONE GROUP FOR THE ENTIRE YEAR.

OFTEN WE FOUND THAT THERE WAS NOT PROPER PROGRAMED INSTRUCTION MATERIALS AVAILABLE FOR THE INDIVIDUAL'S ACADEMIC AND INTELLECTUAL LEVEL AND NEEDS. THUS, THE STUDENT'S ASSIGNMENT TO ONE GROUP OR THE OTHER WAS DETERMINED MORE BY THE FACTORS JUST DESCRIBED THAN A STRICTLY RANDOM ASSIGNMENT. ALSO, SCHOOL OFFICIALS FROM A YOUNGSTER'S HOMETOWN, IN A FEW INSTANCES, OBJECTED TO THE USE OF PROGRAMED INSTRUCTION AND WOULD NOT GIVE CREDIT FOR SCHOOL WORK COMPLETED AT THE HOSPITAL IF SUCH METHODS WERE USED. THE RESULT OF THESE OBSTACLES WAS THAT WHEN WE STARTED ARRANGING OUR DATA FROM THE VERMONT STATE HOSPITAL, WE FOUND THAT THERE WAS NOT A CLEAR DICHOTOMY BETWEEN EXPERIMENTAL AND CONTROL GROUPS BUT RATHER SEVEN CATEGORIES IN WHICH THE CHILDREN WERE PLACED. FOR EXAMPLE, THERE WERE THE FOLLOWING GROUPS AND N IN EACH GROUP: EXPERIMENTAL GROUP SINCE FEBRUARY, TWO CHILDREN; EXPERIMENTAL GROUP SWITCHED TO CONTROL GROUP IN FEBRUARY, FIVE CHILDREN; CONTROL GROUP TO EXPERIMENTAL GROUP IN FEBRUARY, ONE CHILD; CONTROL GROUP ENTIRE YEAR, FOUR CHILDREN; CONTROL GROUP, SEPTEMBER TO JANUARY, ONE CHILD; CONTROL GROUP SINCE FEBRUARY, THREE CHILDREN; CONTROL GROUP TO EXPERIMENTAL GROUP IN FEBRUARY, ONE CHILD (USED PROGRAMED INSTRUCTION IN MATH ONLY).[1]

A GLANCE AT THE CATEGORIES AND THE N FOR EACH IS SUFFICIENT TO ILLUSTRATE WHY OUR DATA WOULD NOT JUSTIFY AN ANALYSIS OF VARIANCE OR ANY OTHER TEST OF SIGNIFICANCE.

THE OTHER TWO SCHOOLS WITH WHOM WE WORKED HAD DIFFERENT TYPES OF

[1]SEE APPENDIX A, TABLE VII

14

PROBLEMS, BUT NONETHELESS THEY MAKE ANY ANALYSIS OF THE SIGNIFICANCE OF THE DATA VERY DIFFICULT, IF NOT IMPOSSIBLE. MR. DONALD JAMIESON, THE PRINCIPAL OF WATERBURY HIGH SCHOOL, TOUCHED UPON ONE OF THE PROBLEMS WHEN HE SAID "OUR PROJECT AT WATERBURY CANNOT PROVE OR DISPROVE THE VALUE OF PROGRAMED INSTRUCTION. THERE WERE TOO MANY VARIABLES TO MAKE IT POSSIBLE TO ARRIVE AT ANY SUCH CONCLUSION." WE WILL NOT ATTEMPT HERE TO LIST THE "MANY VARIABLES" WHICH INTERACTED WITH OUR PRIME INDEPENDENT VARIABLE, PROGRAMED INSTRUCTION. THE EDUCATORS' EVALUATIONS FROM RICE MEMORIAL HIGH SCHOOL AND WATERBURY HIGH SCHOOL CLEARLY INDICATE THE MAJOR CONSIDERATIONS WHICH WOULD HAVE TO BE ACCOUNTED FOR IN EVALUATING THEIR SCHOOLS' TESTING SCORES.

LAST YEAR WE CALLED ATTENTION TO A TREND WHEREIN THERE WERE LARGER INTRAGROUP DIFFERENCES THAN INTERGROUP DIFFERENCES. THE TEST DATA GATHERED DURING THIS SECOND YEAR AND THE EDUCATORS' COMMENTS IMPLY THAT THIS TREND CONTINUES. THAT IS THERE ARE CERTAIN TYPES OF STUDENTS WHO DO WELL WITH PROGRAMED INSTRUCTION AND THOSE WHO DO NOT.

THE AFOREMENTIONED PROBLEMS NOTWITHSTANDING, IT IS STILL MEANINGFUL TO PRESENT SEVERAL OF THE RAW SCORES AND MEDIANS WE OBTAINED TO ILLUSTRATE THE TYPE OF OBJECTIVE RESULTS WE OBTAINED. APPENDIX A SERVES THIS PURPOSE.

TABLES I AND II DEMONSTRATE THAT THE SLIGHT DIFFERENCES WHICH EXIST BETWEEN THE EXPERIMENTAL AND CONTROL GROUPS COULD BE EXPECTED BY CHANCE ALONE. WE HAVE LISTED MEDIANS BECAUSE THEY ARE LESS INFLUENCED BY EXTREME SCORES, BUT FOR THE MOST PART THE MEANS WERE ALMOST EXACTLY THE SAME AS THE MEDIANS. THIS WOULD INDICATE THE ABSENCE OF MANY EXTREME SCORES.

TABLES III THROUGH VI ARE INCLUDED TO GIVE A MORE DETAILED ACCOUNT OF INDIVIDUAL SCORES ON TWO TESTS OF ACHIEVEMENT: THE IOWA TEST OF BASIC SKILLS AND THE STANFORD ACHIEVEMENT TEST. THESE DATA DO NOT REVEAL MUCH OF THE DYNAMICS OF THE EDUCATION PROCESS AT THE TWO SCHOOLS, EXCEPT PERHAPS TO SHOW THAT ALMOST ALL THE STUDENTS WERE WORKING BELOW THEIR EXPECTED GRADE LEVEL. LET IT BE NOTED, HOWEVER, THAT THE NATIONAL NORMS WHICH WERE USED FOR THE TESTS WERE NOT REPRESENTATIVE OF THE GROUPS WE WERE STUDYING AND PERHAPS WERE TOO HIGH FOR OUR STUDENTS.

TABLE VII IS INCLUDED IN THE REPORT SIMPLY TO SHOW THE GROUPINGS OF STUDENTS AT THE VERMONT STATE HOSPITAL. THEREIN IS CONTAINED A MOST DRAMATIC INDICATION OF THE PLACEMENT PROBLEMS WE ENCOUNTERED AND THE END RESULT. IT IS QUITE OBVIOUS THAT INTERGROUP COMPARISONS WOULD BE UNINTERPRETABLE.

AS A RESULT OF OUR DIFFICULTY IN USING OBJECTIVE DATA TO EVALUATE THE USEFULNESS OF PROGRAMED INSTRUCTION DURING THIS SECOND SCHOOL YEAR, WE ARE REQUESTING THE TEACHERS OF BOTH THE EXPERIMENTAL AND CONTROL GROUPS TO KEEP "DIARIES ON THE SOCIOLOGICAL, PSYCHOLOGICAL AND ACADEMIC ASPECTS OF THEIR STUDENTS." WE HOPE THAT THIS WILL PERMIT MORE MEANINGFUL COMPARISONS AT THE TERMINATION OF THE THIRD SCHOOL YEAR.

MANY COMMENTS RECEIVED FROM THOSE WHO READ OUR FIRST REPORT INDICATED CONSIDERABLE INTEREST IN THE COMMENTS MADE BY THE TEACHERS IN THE HOSPITAL SCHOOL AND IN WATERBURY HIGH SCHOOL. A NUMBER OF THE INDIVIDUALS WHO COMMENTED EXPRESSED THEIR BELIEF THAT IN THE END THESE TEACHER COMMENTS

MIGHT PROVE TO BE A MORE VALUABLE MEANS OF EVALUATING THE RESULTS OF THIS PROJECT THAN COULD BE OBTAINED FROM THE OBJECTIVE TEST DATA. HENCE, IN SECTION III WE PRESENT WHAT WE CONSIDER TO BE A FAIR SAMPLING OF THESE TEACHER COMMENTS, AND WE URGE THAT CAREFUL CONSIDERATION BE GIVEN TO THESE TEACHER EVALUATIONS OF THE USE OF PROGRAMED AIDS TO PERSONALIZED EDUCATION.

SECTION III - TEACHERS' COMMENTS AFTER USING PROGRAMED INSTRUCTION

MOST OF THE PEOPLE WHO READ THIS SECOND PROGRESS REPORT HAVE READ THE INITIAL COMMENTS OF THE TEACHERS AT THE VERMONT STATE HOSPITAL, MISS ESTHER WHEELER AND MR. HOMER MURRAY. THOSE PREVIOUS COMMENTS REFLECTED THEIR FEELINGS ABOUT THE USE OF PROGRAMED AIDS TO PERSONALIZED EDUCATION AND WHY THEY LIKE THEM.

WHILE SOME OF THEIR FEELINGS AND REASONS FOR LIKING PROGRAMED MATERIALS ARE EXPRESSED IN THEIR COMMENTS AT THE END OF THE SECOND YEAR OF OUR PROJECT, THEY PREFERRED TO AVOID UNNECESSARY REPETITION. HENCE, THEIR COMMENTS THIS YEAR ARE INTENDED TO ANSWER SOME OF THE OBJECTIONS AND CRITICISMS RECEIVED FROM PUBLIC SCHOOL TEACHERS. IN ADDITION THEY HAVE ENDEAVORED TO DESCRIBE PROCEDURES AND ATTITUDES NECESSARY FOR THE SUCCESSFUL USE OF PROGRAMED INSTRUCTION. ONE OF OUR BIGGEST PROBLEMS HAS BEEN TO COMMUNICATE THESE IDEAS, ATTITUDES, AND PROCEDURES TO PUBLIC SCHOOL TEACHERS USING THESE MATERIALS FOR THE FIRST TIME. WE HOPE THAT THIS EXPLANATION WILL ENABLE THE READER TO UNDERSTAND WHY WE HAVE QUOTED MISS WHEELER AND MR. MURRAY IN MORE DETAIL THAN THE OTHER TEACHERS AND WHY THEIR COMMENTS AT TIMES MAY SOUND LIKE A SALES BROCHURE ISSUED BY A COMPANY SELLING PROGRAMED MATERIALS.

WE HAVE PREFERRED NOT TO IDENTIFY THE PUBLIC SCHOOL TEACHERS BY NAME. WE FOUND, TOO, THAT CERTAIN COMMENTS WERE MADE BY MOST IF NOT ALL THESE TEACHERS. THEREFORE WE HAVE TRIED TO SELECT COMMENTS IN SUCH A WAY AS TO AVOID UNNECESSARY REPETITION. WE HAVE ENDEAVORED, TOO, TO SELECT COMMENTS AS OBJECTIVELY AS POSSIBLE AND TO AVOID PRESENTING A PICTURE WHICH WOULD CONSIST OF AN UNDUE PROPORTION OF COMMENTS FOR OR AGAINST PROGRAMED INSTRUCTION.

COMMENTS OF MISS ESTHER WHEELER THE ELEMENTARY SCHOOL TEACHER AT THE VERMONT STATE HOSPITAL:

BEFORE INTRODUCING PROGRAMED INSTRUCTION INTO THE CURRICULUM FOR OUR EMOTIONALLY DISTURBED CHILDREN AT THE VERMONT STATE HOSPITAL, I SPENT MANY HOURS STUDYING THIS MATERIAL TO DETERMINE WHICH PROGRAMED UNITS WOULD BEST FIT THE NEEDS OF EACH INDIVIDUAL CHILD. THERE ARE SOME FINE MATERIALS - ESPECIALLY FOR SLOW-LEARNING CHILDREN, FOR DISTURBED YOUNGSTERS, AND FOR THOSE NEEDING REPETITION AND DRILL. OF COURSE PROGRAMED INSTRUCTION IS NOT THE "WHOLE ANSWER" OR PANACEA FOR HELPING ALL CHILDREN, BUT IT CERTAINLY DOES FILL MANY NEEDS FOR MANY CHILDREN.

TO ESTABLISH A GOOD LEARNING SITUATION IT IS IMPORTANT THAT THE STUDENT FEEL RELAXED AND AT EASE. IN MY ROOM DURING THIS PAST YEAR WERE TWO DEFINITE EXAMPLES OF PROGRAMED INSTRUCTION HELPING TO CREATE AN ATMOSPHERE OF RELAXATION FOR THE CHILD. THESE TWO STUDENTS HAD BECOME TENSE, DISCOURAGED, AND FRUSTRATED FROM CONTINUED FAILURE WITH CONVENTIONAL MATERIAL IN THE CLASSROOM. THE UNITS OF THE PROGRAMED MATERIAL WERE WELL-INTRODUCED AND PROGRESSED IN EASY STEPS. HAVING A "MACHINE" TO WORK ON WAS DIFFERENT AND APPEALING. THE COULD DO IT. THEY COULD WORK ALONE AND GAIN SOME INDEPENDENCE. THEY COULD SUCCEED. IN A FEW WEEKS THEY BECAME LESS NERVOUS, MORE RELAXED, AND HAPPIER IN THEIR SUCCESS.

After several years of using programed aids to individualized education, I believe that they have a number of advantages for many pupils though not all. Some of the advantages over the more conventional types of material for individualized instruction are that children like to find and correct their own mistakes. Moreover, they seem to feel more responsible for their own work. Thus I find that many students develop a greater feeling of independence when using programed materials.

These materials, too, are planned and presented in small steps which have been tested and revised to assure a high percentage of success. I should add, too, that these small steps are well suited for young children and upset children who have short attention spans. Moreover each student can easily work at his own rate of speed, and this, too, adds to his feeling of success and sense of worth. All too often slow learners and emotionally upset children feel inferior and have a great need to substitute success for failure if they are to improve in their studies and in their ability to live comfortably with themselves and others.

In my opinion it is very important, too, that mistakes be "caught" as soon as possible after being made. Programed aids seem to "catch" mistakes more quickly than most other instructional materials which I have used.

Still another advantage of programed instruction, at least for many children, is that it seems to make drill and remedial work more profitable. Drill provided by a machine or some other form of programed instruction seems to be resented less than when presented by a teacher. I hardly need to point out that many pupils seem to "get" things only by repetition.

Programed aids also make it much easier to make up work if a child has been out of school because of illness or for some other reason. When he returns, it is very easy to begin where he left off. He does not have a given number of lessons to master to catch up with the class; he has to catch up only with himself.

From a purely personal point of view I like programed instruction because it has been my experience that it enhances a more pleasant atmosphere in the classroom. It alleviates at least some of the tension which too often exists between teacher and pupil. Many times the format of the material makes it easier to detect a basic weakness or source of error and to correct this more easily. Finally, I like having what might be called a number of "helping teachers" which relieve me of many of the routine tasks of teaching and provide the time to do the best teaching that I am capable of doing.

Comments made by Mr. Homer Murray the High School Teacher at the Vermont State Hospital and Supervisor of the hospital school:

It has always been my feeling that learning should be fun. For some students this is not possible unless they are given materials that meet their individual needs. The needs of many learners are not being met today by the conventional type of teaching materials. Therefore we are creating problems for students in school that lead them to be dissatisfied with their experience in the classroom, and they become problems to the school system in all areas of the learning situation.

I BELIEVE THAT THE SOLUTION TO THIS DISSATISFIED ATTITUDE FOR SOME STUDENTS IS THE USE OF PROGRAMED INSTRUCTION MATERIALS. THESE MATERIALS, AT LEAST THE BEST OF THEM ARE PREPARED ACCORDING TO LEARNING PRINCIPLES WHICH HAVE BEEN PROVEN TO BE SOUND, AND THEY ARE CAREFULLY PLANNED AS TO THE SEQUENCE IN WHICH THEY ARE PRESENTED. FURTHERMORE, THE INSTRUCTION IS PRESENTED IN VERY SMALL STEPS, AND EACH PUPIL PARTICIPATES IN EACH OF THESE STEPS.

ANOTHER ASPECT OF PROGRAMED INSTRUCTION WHICH MAKES SATISFIED STUDENTS OUT OF DISSATISFIED STUDENTS IN SOME INSTANCES IS THAT THE PUPIL CORRECTS HIS OWN WORK, AND THIS IS DONE IMMEDIATELY. THUS A CORRECT RESPONSE IS REINFORCED BY THIS IMMEDIATE KNOWLEDGE THAT IT IS CORRECT. MOREOVER, THIS SUCCESS INCREASES PUPIL INTEREST AND PROVIDES GREATER MOTIVATION FOR CONTINUING LEARNING THAN IS PROVIDED BY FAILURE. ONE SHOULD NOT OVERLOOK, EITHER, THE FACT THAT PROGRAMED MATERIALS ARE DESIGNED TO ASSURE SUCCESS A HIGH PERCENTAGE OF THE TIME AND ARE TESTED AND REVISED UNTIL THEY DO. IMMEDIATE STUDENT CORRECTION OF HIS WORK SEEMS TO INCREASE MANY STUDENTS' FEELING OF RESPONSIBILITY FOR HIS OWN PROGRESS.

IT SEEMS TO ME, TOO, THAT AT LEAST THE GOOD PROGRAMED MATERIALS PROVIDE BETTER OPPORTUNITIES FOR EACH PUPIL TO PROGRESS AT HIS OWN SPEED THAN IS PROVIDED BY MOST OF THE MORE CONVENTIONAL MATERIALS. AFTER A NUMBER OF YEARS OF INDIVIDUALIZING INSTRUCTION, I HAVE HAD MUCH MORE SUCCESS SINCE I BEGAN USING PROGRAMED MATERIALS.

STILL ANOTHER WAY IN WHICH PROGRAMED AIDS TO PERSONALIZED, OR INDIVIDUALIZED, EDUCATION HELP IS THAT THEY RELIEVE THE TEACHER OF TEDIOUS DUTIES THAT HE HAS SO OFTEN. THIS PROVIDES TIME FOR HIM TO GIVE THE INDIVIDUAL HELP TO THE PUPIL WHO NEEDS IT WHEN HE NEEDS IT. IN SHORT THE TEACHER CAN BECOME A TROUBLESHOOTER INSTEAD OF A DRILL MASTER, AND HE HAS TIME TO DO THE TEACHING WHICH HE'D LIKE TO DO IF HE DIDN'T HAVE TO SPEND SO MUCH TIME INSTRUCTING.

AS I HAVE TALKED WITH OTHER TEACHERS WHO HAVE USED PROGRAMED MATERIALS, I FIND SOME WHO HAVE NOT REALLY USED THEM PROPERLY. NOT HAVING USED THEM PROPERLY, THE RESULTS OBTAINED COULD NOT BE OF THE BEST. THEREFORE, THE PEOPLE USING THE MATERIALS SHOULD LOOK AT THEM AGAIN AND REAPPRAISE THEIR OWN FEELINGS ABOUT THEM.

A PROGRAM IS NOT SOMETHING MYSTERIOUS. IT IS AN ATTEMPT TO PRESENT MATERIAL THAT IS CLEAR. IT IS ALSO PRESENTED IN A MORE EFFICIENT MANNER. A PROGRAM TRIES TO TEACH THE STUDENT. IT DOES NOT PRESENT THE INFORMATION TO HIM AS A CONVENTIONAL TEXTBOOK DOES.

THE GOOD PROGRAM SHOULD BE CONSIDERED AS A TEXTBOOK THAT IS EFFICIENT. THIS SHOULD BE SO WHETHER IT IS USED IN A MACHINE OR IN TEXT FORM. IT SHOULD BE USED AS A TEXTBOOK IS USED -- NOT AS A MYSTERIOUS DEVICE TO ENTERTAIN THE STUDENT, OR TO ALLOW THE TEACHER MORE TIME FOR OTHER THINGS.

THE PERSON USING THE PROGRAM MUST NOT EXPECT MORE FROM THE PROGRAM THAN IT CAN POSSIBLY GIVE TO THE STUDENT. A PROGRAM WILL INSTRUCT A STUDENT WILLING TO WORK AND LEARN; IF THIS ATTITUDE DOES NOT EXIST, OTHER THINGS HAVE CREATED PROBLEMS FOR THE PUPIL, AND NEED TO BE TAKEN

CARE OF FIRST. THE PERSON SUPERVISING THE PROGRAM MUST CONTROL THE PROCESS OF LEARNING. THE ATTITUDE OF THIS PERSON ENTERS INTO THIS PROCESS, AND HE MUST USE HIS TALENT TO TAKE THE BEST AS HE WOULD IN ANY EDUCATIONAL MATERIAL. THE SUCCESS OR FAILURE OF ANY PROGRAM DEPENDS ON THE TEACHER'S FEELINGS ABOUT IT WHEN HE USES IT WITH HIS STUDENTS. IF HE HAS A POSITIVE ATTITUDE TOWARD THE MATERIAL, THE STUDENT WILL FEEL THIS; IF THE TEACHER'S ATTITUDE IS NEGATIVE, THE STUDENT WILL REACT NEGATIVELY.

MANY TIMES SUCCESS OR FAILURE FOR THE STUDENT COMES FROM AN IMPROPER INTRODUCTION OF THE PROGRAM. IT IS NECESSARY FOR THE TEACHER TO EXPLAIN VERY CAREFULLY HOW THE PROGRAM SHOULD BE HANDLED. THE PUPIL SHOULD UNDERSTAND THE DETAILS OF THE FORMAT IN MOVING FROM LESSON TO LESSON (FRAME TO FRAME). THE STUDENT SHOULD BE SHOWN HOW TO LOCATE THE RIGHT ANSWER TO EACH FRAME, AND HE SHOULD BE TOLD THAT THE PROGRAM IS NOT A TEST. THE PUPIL SHOULD WORK THROUGH A FEW FRAMES, AND THEN DISCUSSION WILL GET HIM TO WORK INDEPENDENTLY.

IT IS MOST IMPORTANT FOR THE INSTRUCTOR TO CHECK THE PUPIL'S WORK FREQUENTLY. THIS KEEPS THE INDIVIDUALS ON THEIR TOES, AND WILL INDICATE THE AREAS THAT MUST BE REWORKED FOR THE CORRECT RESPONSES. THE CHECKING PROCESS INDICATES TO THE STUDENT THAT THE TEACHER IS INTERESTED IN THE PERFORMANCE AND, AS A RESULT, BETTER WORK IS OBTAINED.

FINALLY, IT IS MOST IMPORTANT TO DISCUSS THE WORK IN CLASS, REVIEW ANY AREAS THAT NEED IT, AND OF COURSE THE WORK SHOULD BE TESTED.

COMMENTS MADE BY THE PRINCIPAL OF RICE MEMORIAL HIGH SCHOOL: (HE BECAME PRINCIPAL ABOUT SIX WEEKS BEFORE THE PROJECT BEGAN AT RICE AND HAD LITTLE TIME TO GIVE AS ADMINISTRATOR AND OBSERVER DURING THE FIRST YEAR WHICH HE IS DISCUSSING HERE.)

IT IS DIFFICULT FOR ME TO EVALUATE SATISFACTORILY THE USE OF "PROGRAMED INSTRUCTION" AT RICE MEMORIAL HIGH SCHOOL. I CANNOT DETERMINE THAT ANY MARGIN OF IMPROVEMENT IN LEARNING HAS EMERGED THUS FAR. I CANNOT JUDGE, EITHER, THAT ANY HARM HAS BEEN DONE. IT WOULD SEEM TO ME THAT WE WOULD HAVE TO HAVE MORE EXPERIENCE BEFORE WE COULD EVALUATE. I FEEL, IN ADDITION, THAT OUR TEACHERS WHO ARE INVOLVED NEED MORE EXPERIENCE AND, PERHAPS, MORE IN-SERVICE SUPERVISION IN THE USE OF THE MATERIALS.

THERE ARE A COUPLE OF COMMENTS WHICH I DO FEEL CAN BE MADE:

FROM AN 'ADMINISTRATIVE' POINT OF VIEW, THE NEED TO KEEP THE CLASSES SMALL TO ALLOW FOR THE COMMON INSTRUCTION IN THE NON-PROGRAMED SUBJECTS CREATES A DRAW ON STAFF THAT IS EXPENSIVE. (THIS COMMENT STEMMED FROM MISUNDERSTANDING CAUSED BY INADEQUATE COMMUNICATION. WE BELIEVE THAT IS NOW CORRECTED. -ELDRED)

SECONDLY, TEACHERS TRAINED TO INSTRUCTION IN THE TRADITIONAL MANNER FIND IT HARD AND LESS STIMULATING TO TEACH WITH THE PROGRAMED MATERIALS.

THIRDLY, THE USE OF THE PROGRAMED LEARNING WITH THE POORER STUDENT ACCENTUATES AWARENESS OF BEING GROUPED AND CAUSES PROBLEMS OF STATUS AND SCHOOL RELATIONSHIPS. (A SITUATION NOT ENCOUNTERED AT WATERBURY HIGH SCHOOL AND MUCH LESS AT RICE DURING THE SECOND YEAR. -ELDRED)

I HAVE A SUSPICION THAT OUR STUDENTS LEARNED MORE IN THE TRADITIONAL CLASSES. I HAVE A FURTHER SUSPICION THAT THIS MAY HAVE BEEN THE RESULT

OF OUR INEXPERIENCE WITH THE NEW MATERIALS AND APPROACH. WE HOPE TO STUDY THE PROGRAM MORE CAREFULLY THIS YEAR AND TO BE ABLE TO EVALUATE IT MORE ACCURATELY.

THIS SUMMARIZES MY REACTIONS; I HOPE THAT IT IS ADEQUATE FOR YOUR PURPOSES.

COMMENTS MADE BY THE PRINCIPAL OF WATERBURY HIGH SCHOOL:

OBSERVING OUR PROJECT ON "PROGRAMED INSTRUCTION" DURING THE PAST TWO YEARS HAS LED ME TO MAKE THE FOLLOWING CONCLUSIONS:

1. PROGRAMED INSTRUCTION SEEMS TO BE A GOOD METHOD OF LEARNING FOR CERTAIN STUDENTS.

2. PROGRAMED INSTRUCTION GIVES SOME SLOW LEARNERS THE FIRST SENSE OF ACCOMPLISHMENT THAT THEY HAVE HAD IN SCHOOL IN YEARS.

3. PROGRAMED INSTRUCTION IS APT TO BE BORING TO STUDENTS IF IT IS USED TOO FREQUENTLY AND/OR FOR TOO LONG A PERIOD OF TIME.

4. PROGRAMED INSTRUCTION IS BEST USED IN CONJUNCTION WITH OTHER MEANS OF INSTRUCTION.

5. PROGRAMED INSTRUCTION NEEDS TEACHERS WHOSE INTERESTS AND TRAINING ARE COMPATIBLE WITH 'PROGRAMED INSTRUCTION' AND THE STUDENTS INVOLVED.

6. OUR PROJECT AT WATERBURY HIGH SCHOOL CANNOT PROVE OR DISPROVE THE VALUE OF PROGRAMED INSTRUCTION. THERE WERE TOO MANY VARIABLES TO MAKE ANY SUCH CONCLUSION. AMONG THE IMPORTANT VARIABLES, IN MY ESTIMATION, WERE CLASS SIZE, THE HALO EFFECT AND THE HAWTHORN EFFECT.

7. IT WOULD BE AN ASSET TO EDUCATORS IF STUDENTS WHO CAN BEST PROFIT FROM PROGRAMED INSTRUCTION COULD BE IDENTIFIED.

8. ONE OF THE MOST VALUABLE OUTCOMES OF THE PROJECT WAS THE CHANGE IN APPROACH WHICH WAS MADE AS WE LEARNED FROM OUR MISTAKES. I AM CONFIDENT THAT THE SWITCH FROM STRICTLY "PROGRAMED INSTRUCTION" TO "AIDS TO PERSONALIZED EDUCATION" WAS MOST SIGNIFICANT.

COMMENTS BY TEACHERS IN WATERBURY HIGH SCHOOL AND RICE MEMORIAL HIGH SCHOOL:

THE 'ADVANTAGES' ARE THE FOLLOWING:

1. IT ALLOWS THE STUDENT AN OPPORTUNITY FOR SOME INDIVIDUALIZED INSTRUCTIONS NOT OTHERWISE AVAILABLE.

2. IT ALLOWS FOR DIFFERENCES IN A STUDENT'S ABILITY AND RATE OF ACHIEVEMENT.

3. IT REWARDS AND ENCOURAGES STUDENTS WITH ITS IMMEDIATE RESPONSES AND REINFORCEMENTS. IT IS PARTICULARLY INSPIRING TO SEE A SLOW LEARNER LATCH ON WITH ADDED CONFIDENCE IN HIS OWN ABILITY.

4. DISCIPLINE PROBLEMS ARE AT A MINIMUM SINCE A STUDENT NECESSARILY WORKS ALONE OR WITH THE TEACHER.

5. READING ABILITY IS IMPROVED.

6. ALLEVIATES THE TEACHER'S BURDEN OF ENDLESS CORRECTION OF EXERCISES.

THE 'DISADVANTAGES' ARE THE FOLLOWING:

1. IT DOES NOT ALLOW FOR EFFECTIVE USE OF THE IMAGINATION AND EXPRESSION OF VIEWS AND OPINIONS.

2. OFFERS VERY LITTLE OPPORTUNITY FOR COMPETITION AMONGST THE STUDENTS THEMSELVES.

3. SOME STUDENTS, EVEN WITH A VARIETY OF APPROACHES, STILL COMPLAIN OF BOREDOM. THE STUDENTS RESPONDED READILY TO A VARIETY OF APPROACHES, WHETHER IT WAS "PROGRAMED" OR THE ORDINARY TYPE OF INSTRUCTION. THEY ALL REBELLED AGAINST A STEADY DIET OF JUST "PROGRAMED".

4. THE PROGRAM DOES NOT OFFER ENOUGH INTERRELATED AUDIO-VISUAL MATERIALS.

THE MACHINE OFFERED CONSIDERABLE PLEASURE FOR SOME, WHILE OTHERS REFUSED TO USE IT. IT MADE TOO MUCH NOISE, SOME WERE AFRAID OF IT, OR THEY HAD TO DO TOO MUCH READING.

I THINK THAT THERE SHOULD BE SOME WAY, MORE OR LESS, OF PROCESSING STUDENTS SINCE SOME DEFINITELY HAVE MUCH TO GAIN IN "PROGRAMED INSTRUCTION", WHILE OTHERS MIGHT DO BETTER IN AN ORDINARY SITUATION.

I HAVE ENJOYED THIS YEAR AND FEEL THAT I CAN USE "PROGRAMED INSTRUCTION" TO THE STUDENT'S ADVANTAGE IN A REGULAR CLASSROOM TO FULFILL THE NEEDS OF INDIVIDUAL PROBLEMS.

****

MY OVERALL IMPRESSION OF "PROGRAMED INSTRUCTION" IS THAT WHEN IT IS USED AS A <u>BASE</u> OR <u>FOUNDATION TO BE ELABORATED UPON</u> BY THE AFOREMENTIONED METHODS, IT PROVIDES A GOOD MEANS OF EDUCATION. IT SEEMS TO ME THAT "PROGRAMED INSTRUCTION" WORKS BEST WITH A SLOW STUDENT THAT <u>CAN BE MOTIVATED</u>.

A LIST OF THE MOST OUTSTANDING OR FAVORABLE ACHIEVEMENTS OF "PROGRAMED INSTRUCTION" ARE AS FOLLOWS:

1. ALLOWS PUPILS TO PROCEED AT THEIR OWN SPEED.

2. ALLOWS PUPILS TO REVIEW MATERIAL THEY FEEL THEY ARE WEAK ON.

3. <u>GENERALLY</u> - THE MATERIAL IS ACCURATE AND IN VERY WELL ORGANIZED FORM.

4. ALLOWS PUPILS TO EASILY MAKE UP WORK THEY HAVE MISSED DUE TO ABSENCE FROM SCHOOL.

5. ALLOWS INDIVIDUAL INSTRUCTION IN AREAS OF SPECIFIC PUPIL WEAKNESSES.

6. TENDS TO ENCOURAGE THE MOTIVATED STUDENT TO SEEK OUT EXPLANATIONS IN AREAS WHICH ARE DIFFICULT TO UNDERSTAND.

7. GIVES THE TEACHER MORE TIME FOR ELABORATION AND CLARIFICATION OF MATERIAL.

8. THREE STUDENTS FOUND SUCCESS WITH THE "PROGRAM" THEY NEVER COULD HAVE APPROACHED IN 'GENERAL SCIENCE' TAUGHT IN THE USUAL MANNER.

9. ALLOWS PUPILS ESPECIALLY INTERESTED IN AN AREA TO FINISH THE AREA IN A DAY WORKING OUTSIDE OF CLASS.

10. ALLOWS PUPILS TO "STOP TAKING NOTES" FOR DAYS AT A TIME AND ENGAGE IN INDIVIDUAL PROJECTS AND EXPERIMENTS.

11. FROM A PSYCHOLOGICAL POINT OF VIEW, PROGRAMED INSTRUCTION CARRIES WITH IT THE "ANYONE CAN DO IT IF THEY TRY" LABEL. I FEEL THIS SENSE OF BEING CAPABLE IS IMPORTANT TO THE SLOWER GROUP.

12. THE PHONETIC SPELLING OF DIFFICULT WORDS HELPS STUDENT UNDERSTANDING AND HELPS DEVELOP STUDENT VOCABULARY.

13. I FOUND THE PRESENTATION OF MOST AREAS VERY CONCISELY PUT AND WELL PRESENTED. THIS IS A BIG HELP TO ANY LIBERAL TEACHER ESPECIALLY IF HE IS A BEGINNER.

14. IN SPECIFIC AREAS (SECTIONS), THE MATERIAL BUILT UPON KNOWLEDGE ALREADY GAINED. IT GAVE STUDENTS A REVIEW AND A SENSE OF ACCOMPLISHMENT.

15. IN SCHOOLS TOO SMALL TO HAVE PRECISE HOMOGENEOUS GROUPING -- PROGRAMED INSTRUCTION MAY BE THE BEST WAY TO PRACTICABLY PROVIDE FOR INDIVIDUAL DIFFERENCES.

A LIST OF THE "UNFAVORABLE ASPECTS" OF PROGRAMED INSTRUCTION ARE AS FOLLOWS:

1. FOR THE BRIGHTER STUDENTS, ASPECTS OF THE MATERIAL WERE FAR TOO EASY AND REPETITIVE.

2. FOR THE SLOWER STUDENTS, SOME ASPECTS OF THE PROGRAM IN GENERAL SCIENCE WERE TOO DIFFICULT. (I.E. TELEVISION AND RADIO.)

3. SOME OF THE MATERIAL PRESENTED TO THESE SLOW STUDENTS HAS LITTLE, IF ANY, PRACTICAL APPLICATION FOR THEM.

4. I FEEL A SUPPLEMENT INDICATING DEMONSTRATION AND EXPERIMENTS WHICH THE DESIGNER OF THE PROGRAM FELT WOULD IMPROVE THE LEARNING EXPERIENCE IS A NECESSARY ADDITION TO THE FOUR BOXES.

5. PUPILS TEND TO DRAG OUT THE UNITS WHEN ALLOWED TO PROCEED ENTIRELY AT THEIR OWN SPEED. THUS I HAD TO SET UP THE VARIABLE LIMITS FOR THE INDIVIDUAL STUDENTS.

6. TOO MANY SUCCESSIVE DAYS OF NOTHING BUT THE PROGRAM OR TOO MANY PROGRAMED COURSES IN A ROW TENDS TO INCREASE, TO AN INTOLERABLE LIMIT, THE BOREDOM OF STUDENTS.

7. A MORE DETAILED DESCRIPTION OF THE AIMS, OBJECTIVES, METHODS AVAILABLE. ETC., IN PROGRAMED INSTRUCTION SHOULD BE GIVEN THE PARTICIPATING TEACHER BY THOSE ADMINISTERING THE PROGRAM. (WAS OFFERED BUT NOT ACCEPTED BY THE ADMINISTRATION. -ELDRED)

8. FROM A PSYCHOLOGICAL VIEWPOINT, A MORE COLORFUL PRESENTATION BOTH IN LANGUAGE AND DIAGRAMS WOULD DO MUCH TO ALLAY BOREDOM. FOR EXAMPLE, COLORED PICTURES AND DIAGRAMS, ALTHOUGH MORE EXPENSIVE, WOULD SEEM WELL WORTH IT.

9. THE SHEETS WOULD BE SIMPLER FOR THE SLOW STUDENT TO USE AND WOULD LAST LONGER AND REMAIN IN ORDER IF PUT IN BOOK FORM INSTEAD OF THE LOOSE ARRANGEMENT IN BOXES.

10. ONE PROBLEM I HAD TO COMBAT WAS THE PROBLEM OF THE STUDENTS LEARNING CONCEPTS. THE WAY THE MATERIAL IS PRESENTED WITH ONE OR TWO WORD ANSWERS, OFTEN RESULTS IN THE STUDENT LEARNING ONLY THE CORRECT REPLY TO THE SPECIFIC SENTENCE AND NOT INTEGRATING THAT SENTENCE INTO THE OVERALL CONCEPT. ON ESSAY QUESTIONS, MOST OF THE STUDENTS HAD MUCH MORE DIFFICULTY THAN ON THE OBJECTIVE QUESTIONS WHICH APPROXIMATED THE MANNER OF PRESENTATION IN THEIR PROGRAM.

****

IN REGARD TO "PROGRAMED INSTRUCTION", I OFFER THE FOLLOWING COMMENTS:

1. IT HAS NOT HINDERED IN ANY WAY THE STUDENT PROGRESS I NORMALLY ACHIEVE IN THE CONVENTIONAL PROGRAM.

2. IT HAS ITS OWN VALUE IN THAT THE STUDENTS SEEM MORE RELAXED IN THEIR EFFORTS TO ACHIEVE RESULTS AT THEIR LEVEL AND AT THEIR OWN SPEED.

3. AS A WHOLE THEY DO SEEM TO FIND IT MONOTONOUS AFTER A WHILE, SO WHEN THESE SIGNS OCCUR, IT INDICATES TO ME THAT THEY NEED A LITTLE CHANGE SUCH AS A CONVENTIONAL TYPE LESSON WHICH THEY DO RECEIVE NOW AND THEN.

4. IN REGARD TO PROCEDURE AT THEIR OWN INDIVIDUAL RATE OF SPEED, I FOUND IT NECESSARY TOWARD MID-YEAR AND FINALS TO SET SOME QUOTA FOR NUMBER OF UNITS. OTHERWISE, I WOULD HAVE HAD A FEW WITH VERY LITTLE DONE, BECAUSE THEY WOULD BE INCLINED TOWARD FREQUENT REST PERIODS OR DISTRACTIONS. AT THE SAME TIME, I DID ENCOURAGE OTHERS OF THE CLASS TO GO AHEAD AS MUCH AS POSSIBLE SINCE THIS WOULD BE TO THEIR OWN CREDIT BY WAY OF RECEIVING SPECIAL READING PRIVILEGES IF THEY COMPLETED THEIR "2600 GRAMMAR" BEFORE THE OTHERS. THIS SEEMED TO WORK WELL, SINCE THEY LIKE THE "PILOT LIBRARY" CONTAINING A VARIETY OF SUBJECTS AND ON VARIOUS READING LEVELS.

5. THIS TYPE OF WORK, I FELT, ENABLED EACH STUDENT TO DEVELOP A SENSE OF PERSONAL RESPONSIBILITY.

I HOPE THAT I HAVE HEREBY GIVEN YOU SOME IDEA OF HOW THE PROGRAM WAS HANDLED AND MY VIEWPOINT OF THIS TYPE OF INSTRUCTION.

****

THE STUDENTS USING PROGRAMED INSTRUCTION FOR THE PAST YEAR SEEMED TO HAVE MIXED FEELINGS ABOUT THE PROCESS OF EDUCATION IN WHICH THEY WERE SINGULARLY INVOLVED. CHILDREN AT THEIR STAGE OF DEVELOPMENT ARE SENSITIVE ABOUT THEIR BEING SINGLED OUT OF THE CROWD AND MADE TO FEEL THAT THEY ARE SOMEHOW DIFFERENT FROM THEIR PEERS. EVEN PRIOR TO THEIR INTRODUCTION TO THE NEW METHOD, THESE STUDENTS REALIZED THAT THEY WERE AT THE BOTTOM OF THE LEARNING ABILITY SCALE IN THE "C" GROUP, OR SIMPLY IN A GROUP WHERE THE MAJORITY OF THE STUDENTS HAVE BELOW AVERAGE INTELLIGENCE. HOWEVER,

PROGRAMED INSTRUCTION, FOR MANY OF THE PUPILS, MADE IT MORE APPARENT THAN USUAL THAT THEY WERE IN NEED OF SPECIAL ASSISTANCE BEYOND WHAT THE AVERAGE YOUNGSTER RECEIVES.

FROM A TEACHER'S STANDPOINT, SISTER -- FEELS THAT PROGRAMED INSTRUCTION LEAVES MUCH TO BE DESIRED IN CERTAIN AREAS. FOR INSTANCE, SHE REALIZED THAT HER WHOLE BACKGROUND IS DIRECTED TOWARDS TEACHING UNDER THE CONVENTIONAL LECTURE-TYPE METHODS, AND PROGRAMED INSTRUCTION DOES NOT USUALLY ALLOW TOO MUCH LEEWAY FOR LECTURES. OFTEN, HOWEVER, SHE BELIEVED THAT SHE HAD TO INTERJECT A LECTURE TO THE CLASS AS SHE FELT THAT THE PROGRAMED TEXT WAS EITHER UNINTERESTING OR REPETITIOUS TO THE POINT OF BEING CONFUSED.

DISCIPLINE, ALSO, WAS APT TO BE A PROBLEM WITH YOUNGSTERS WHO HAVE NOTHING TO DO ALL PERIOD EXCEPT READ. THIS WAS TRUE FOR TWO REASONS. THE YOUNGSTERS WHO WERE IN THE EXPERIMENTAL GROUP HAD READING PROBLEMS IN THE FIRST PLACE, AND THIS PRIMARY PROBLEM INTERFERED WITH THEIR COMPREHENDING SUBJECTS PRESENTED IN WRITTEN FORM. THEN, TOO, YOUNGSTERS IN THIS GROUP HAVE A LIMITED ATTENTION SPAN AND THEIR MOTIVATION, IF IT IS KEPT HIGH, MUST BE CAPTURED BY VARIED AND INTERESTING ACTIVITIES. HOWEVER, IT IS NOT NECESSARILY WHAT ONE TEACHES THAT MAKES FOR GOOD DISCIPLINE, BUT RATHER THE TEACHER-STUDENT RELATIONSHIP WHICH IS PARAMOUNT.

SISTER -- FOUND THAT IF WORK WAS TOO REPETITIOUS, STUDENTS WERE APT TO BE LAZY... AND SOME WERE MEMORIZING THE READING MATERIAL; BUT WHEN ASKED QUESTIONS AFTER THE MATERIAL HAD BEEN RE-ARRANGED, THEY FREQUENTLY COULD MAKE NO REPLY.

IT WOULD BE ADVANTAGEOUS, IN PLANNING FUTURE CURRICULA, TO KNOW IN ADVANCE THE TYPE OF PERSONALITY WHO WOULD DO WELL USING PROGRAMED INSTRUCTION. THUS, WE COULD SUIT THE EDUCATIONAL NEEDS OF THE STUDENT TO THE PROGRAM AND IMPROVE HIS CHANCES FOR SUCCESS IN SCHOOL.

****

THE USE OF PERSONALIZED AIDS IN A SETTING SUCH AS OURS HAS MANY GOOD POINTS, PROVIDED THE PERSONNEL SETTING THEM UP FULLY UNDERSTANDS WHO AND HOW THEY ARE TO BE USED. THE TYPES OF MACHINES, THEIR PURPOSE, THEIR MATERIALS, AND THEIR PREDICTED COMPLICATION SHOULD BE CAREFULLY CONSIDERED.

****

SECTION IV - COMMENTS

WE HAVE REREAD THE COMMENTS MADE AT THE END OF OUR FIRST PROGRESS REPORT. WITH THE POSSIBLE EXCEPTION OF THE COMMENT AS TO WHETHER "PROGRAMED" SHOULD BE SPELLED WITH ONE "M" OR TWO "MS," WE WOULD REITERATE THE COMMENTS MADE IN OUR PREVIOUS REPORT.

1. IN SECTION I OF THIS REPORT WE HAVE MADE ADDITIONAL COMMENTS AND DESCRIBED DEVELOPMENTS WITH REGARD TO THE NEED FOR CRITERIA TO DETERMINE WHICH STUDENTS WILL DO BEST WITH PROGRAMED AIDS AND WHICH WILL MAKE MORE PROGRESS USING MORE CONVENTIONAL MEDIA OF INSTRUCTION.

UNFORTUNATELY, THE BASIS FOR SUCH SELECTION HAS NOT BEEN AVAILABLE IN WATERBURY AND RICE HIGH SCHOOLS WHICH HAVE SUPPLIED THE MAJOR PORTION OF OUR SUBJECTS DURING THE PAST YEAR. OUR SELECTION METHODS HAVE WORKED WELL WITH THE LIMITED NUMBER OF HOSPITAL STUDENTS. HOWEVER, WE HESITATE TO DESCRIBE THESE SELECTION CRITERIA UNTIL THEY HAVE BEEN TRIED WITH A LARGER NUMBER OF STUDENTS. INDEED IT SEEMS LIKELY THAT WE SHALL NEED FUNDS TO EXTEND OUR STUDY BEFORE WE CAN HOPE TO REPORT ANY DEFINITIVE RESULTS.

2. THE EXPERIENCE OF OUR SECOND YEAR HAS PROVIDED ADDITIONAL REASON FOR EMPHASIZING THAT NOT ALL TEACHERS ARE SUITED TO USE PROGRAMED AIDS. THE TEACHER WHO EXPECTS PROGRAMED INSTRUCTION TO DO MOST OF HIS WORK FOR HIM AND TO BE FREED FROM LESSON PLANS AND THE NEED TO CULTIVATE IN STUDENTS THE ABILITY TO INTERRELATE KNOWLEDGE AND USE IT CREATIVELY WILL HAVE POOR RESULTS FROM THE USE OF PROGRAMED MATERIALS. THE TEACHER WHO IS MASTER OF HIS SUBJECT AND WHO FEELS THAT HE MUST DOMINATE HIS CLASSROOM AND HIS STUDENTS WITH HIS VAST FUND OF KNOWLEDGE WILL ALSO ACHIEVE DISAPPOINTING RESULTS FROM USING PROGRAMED INSTRUCTION. THE TEACHER WHO WILL USE PROGRAMED AIDS SUCCESSFULLY WITH CERTAIN STUDENTS IS THE FLEXIBLE, INGENIOUS TEACHER WHO HAS AN INQUIRING MIND AND WHO LIKES TO PIONEER AND EXPERIMENT. HE MUST ALSO BE A TEACHER WHO KNOWS EACH OF HIS STUDENTS AS WELL AS POSSIBLE AND WHO IS CONSTANTLY SEEKING WAYS TO EFFECTIVELY INDIVIDUALIZE INSTRUCTION. HE MUST BE A TEACHER WHO THINKS OF PROGRAMED INSTRUCTION AS AN AID WHICH RELIEVES HIM OF THE NECESSITY OF BEING A DRILL MASTER AND FREES HIM TO BE A TROUBLE SHOOTER AND REAL TEACHER.

3. WE ARE STILL UNCERTAIN WITH REGARD TO HALO AND HAWTHORNE EFFECTS. WE DO NOT BELIEVE THAT WE HAVE FOUND A WAY TO REMOVE THE NEGATIVE ATTITUDE TOWARD TESTS WHICH EXISTS IN MANY STUDENTS AS A RESULT OF A LONG RECORD OF BEING FAILED BY TESTS. HENCE, WE ARE STILL SEARCHING FOR ADEQUATE AND RELIABLE MEANS OF EVALUATING WHAT HAS BEEN ACHIEVED BY PROGRAMED INSTRUCTION AS COMPARED WITH THE MORE CONVENTIONAL TYPES OF INSTRUCTIONAL MATERIALS. WE BELIEVE THAT ANECDOTAL MATERIAL AND RECORDED OBSERVATIONS OF EXPERIENCED TEACHERS AND OBSERVERS MUST BE GIVEN MORE ATTENTION THAN IS THE CUSTOM IN THIS AGE OF CHI SQUARES AND ANALYSES OF VARIANCE.

4. OUR SECOND YEAR OF EXPERIENCE HAS MADE IT INCREASINGLY CLEAR THAT PROGRAMED INSTRUCTION SHOULD NOT BE UNDERTAKEN UNLESS THOSE WHO ARE IN CHARGE OF RESEARCH HAVE THE AUTHORITY AND CONTROL NECESSARY TO ASSURE THAT THE RESEARCH DESIGN IS FOLLOWED AND TO KEEP VARIABLES AT A MINIMUM CONSISTENT WITH PROPER ADMINISTRATION OF THE SCHOOL PROGRAM.

5. Strange as it may seem we have found that teachers should be provided with and use sufficient time to become thoroughly familiar with programed materials before beginning to use them! During this past year we have had teachers attempting to use programed aids with no more than three or four days preparation. A workshop and opportunity to observe the use of programed aids by someone experienced in their use is highly desirable.

6. We hope that we have made it abundantly clear how important it is to have adequate and effective means of communication between the school administration, teachers, and research workers. Programed instruction is not automation and requires coordinated communication among all participants.

7. We would like to emphasize the part which we believe perceptual deficiencies play in the learning problems of many students. Though programed instruction may help some of these students to be more successful and mentally healthier than would be the case if they used conventional materials, programed instruction is not the Alpha and the Omega. We are finding that it is a great mistake to look to programed aids to solve most of the learning problems of any student. More testing for perceptual deficiencies followed by remedial exercises for the deficiencies uncovered is a fundamental prerequisite.

8. By now it must be evident that we are fast abandoning many of the sweeping generalizations made at the beginning of this project. The use of programed instruction with disturbed students or with students who have learning problems is proving to be a much more complicated matter than we had realized. More and more our present project has become a pilot project which has taught us a lot of do's and dont's and which has shown some of the reasons why some people are so enthusiastic about programed materials while others are so anti-programing.

9. In spite of all the comments which sound critical of programed instruction and as though our project had failed, we cannot ignore the fact that a number of the teachers who have used programed materials have become "converted" to their use and possibilities and have grown increasingly enthusiastic about what programed materials can accomplish when properly used by the right teacher with the right students.

10. At the end of our second year, then, we would say that programed instruction has much to offer if certain guidelines are followed. We offer these guidelines. In the first place one must determine what one is trying to accomplish, what one's objectives are. Then he must know each student as well as possible. Thirdly, he must be thoroughly familiar with a considerable variety of the better programed materials currently available. Then he selects the programed aid best suited to each student to accomplish the chosen objectives. Instruction must not be confined to programed instruction, and teaching must take place constantly. Last but not least the old law of learning of instruction, practice, more instruction, and more practice has not been repealed by programed materials.

11. Finally, we would report that in spite of the sample of test results found in Appendix A, those of us who have become most familiar with programed aids have become increasingly enthusiastic about their

POTENTIALITIES. WE CANNOT IGNORE REPEATED COMMENTS SUCH AS "IF I HAD HAD THIS KIND OF INSTRUCTION BEFORE I CAME TO THE VERMONT STATE HOSPITAL I WOULDN'T BE HERE NOW."

APPENDIX A

TABLE I

HIGH SCHOOL A

"MEDIANS"

"TESTS"	"GROUP" EXPERIMENTAL: 9/64 - 5/65		CONTROL: 9/64 - 5/65	
"STANFORD ACHIEVEMENT TEST":				
PARA. MEAN.) SPELLING) -ENGLISH: LANGUAGE)	66	72	70	84
ARITH. COMP.) ARITH. CONC.) -ARITHMETIC: ARITH. APPL.)	76	78	67	72
-SCIENCE:	66	82	72	85
MEDIAN OF AVERAGE GRADE SCORE:	68	74	70	80
"LORGE-THORNDIKE INTELLIGENCE TEST":				
VERBAL I.Q.:	90	92	90	93
NON-VERBAL I.Q.:	91	92	90	88
VERBAL G.P.:	7.9	8.2	8.0	9.2
NON-VERBAL G.P.:	8.5	8.7	8.3	7.5
VERBAL M.A.:	13-3	13-8	13-5	14-8
NON-VERBAL M.A.:	13-4	14-1	13-7	12-10
ACTUAL C.A.:	14-10	15-6	15-4	15-7
"MOONEY PROBLEM CHECK LIST":				
SCHOOL:	10	12	9	10
PEOPLE:	4	10	4	4
TOTAL:	67	72	33	38
"CLASSWORK-TEACHER APPRAISAL":				
ENGLISH:	2.0	2.5	1.5	1.8
SCIENCE:	2.3	2.0	2.7	3.1
MATH:	***	***	1.9	3.1
CIVICS: BOTH "GROUPS" COMBINED:- 9/64 - 5/65			1.8	1.9
"STUDENT APPRAISAL":				
ENGLISH:	2.9	3.2	2.7	2.6
SCIENCE:	2.9	3.0	3.2	3.3
MATH:	2.8	3.2	***	3.2
MEDIAN OF MEANS:	2.8	3.0	3.0	3.1
"SOCIOMETRIC":				
NO. OF CHOICES:	8	7	10	8
VALUE OF CHOICES: (MEDIAN OF MEANS)	4.5	4.2	5.1	4.5

***-DATA NOT AVAILABLE:
CLASSWORK-TEACHER APPRAISAL - MATH
STUDENT APPRAISAL - MATH

APPENDIX A

TABLE II

HIGH SCHOOL B

"MEDIANS"

"Tests"	"Group" Experimental: 9/64	-5/65	Control: 9/64	-5/65
"Iowa Test of Basic Skills":				
Vocabulary:	87	89	81	88
Reading:	79	84	77	83
Language:	78	80	72	77
Work-Study:	76	85	75	80
Arithmetic:	77	85	76	83
Composite:	80	86	76	81
"Lorge-Thorndike Intelligence Test":				
Verbal I.Q.:	89	92	90	89
Non-Verbal I.Q.:	91	91	93	93
Verbal G.P.:	7.7	8.7	7.6	8.2
Non-Verbal G.P.:	7.8	8.5	8.1	8.3
Verbal M.A.:	13-0	14-2	13-0	13-9
Non-Verbal M.A.:	13-2	13-8	13-5	13-10
Actual C.A.:	15-2	15-10	15-0	15-8
"Mooney Problem Check List":				
School:	7	7	7	7
People:	2	2	4	6
Total:	25	24	41	40
"Classwork-Teacher Appraisal":				
Sacred Scripture*	Both "Groups" Combined:		9/64	-5/65
			3.2	3.3
Math:	1.7	1.7	1.6	1.6
English:	3.0	3.6	1.4	1.3
Science:***	***	***	1.4	2.7
"Student Appraisal":				
Sacred Scripture:	3.2	3.2	3.2	3.1
English:	2.6	2.7	3.0	2.9
Math:	2.5	2.7	2.6	2.6
Science:	2.5	2.7	2.9	2.8
Median of Means:	2.7	2.9	3.0	2.8
"Sociometric":				
No. of Choices:	10	11	10	11
Value of Choices: (Median of Means)	6.0	5.9	5.6	5.6

Classwork-Teacher Appraisal:
***(Science): Data Not Available

APPENDIX A

TABLE III

HIGH SCHOOL A

EXPERIMENTAL GROUP

"STANFORD ACHIEVEMENT TEST"

9/64 - FORM X
5/65 - FORM W

*GRADE SCORES

STUDENT No.	PARA. MEAN. 9/64	PARA. MEAN. 5/65	SPELLING 9/64	SPELLING 5/65	LANGUAGE 9/64	LANGUAGE 5/65	ARITH. COMP. 9/64	ARITH. COMP. 5/65	ARITH. CONC. 9/64	ARITH. CONC. 5/65	ARITH. APPL. 9/64	ARITH. APPL. 5/65	SCIENCE 9/64	SCIENCE 5/65	GRADE SCORE AV. 9/64	GRADE SCORE AV. 5/65
1	108	123	54	51	80	88	100	119	99	99	108	98	108	118	94	99
2	64	42	62	66	57	46	62	66	63	72	79	79	54	62	63	62
3	74	68	64	64	64	42	39	26	63	74	63	82	72	48	63	58
4	56	90	64	72	75	99	76	72	80	82	72	72	46	102	67	84
5	92	113	68	74	93	100	78	80	80	76	98	104	83	106	85	93
6	58	72	41	48	88	70	82	72	63	86	79	82	67	104	68	76
7	72	72	57	68	88	103	62	76	72	66	63	63	65	56	68	72
8	42	53	38	38	63	47	80	68	96	78	67	104	62	60	64	64

*GRADE SCORES:
A SCORE OF 83 INDICATES FUNCTIONING IN THE THIRD MONTH OF THE EIGHTH GRADE;
A SCORE OF 104 INDICATES THE FOURTH MONTH OF THE TENTH GRADE; AND SO ON.

APPENDIX A

TABLE IV

HIGH SCHOOL A

CONTROL GROUP

"STANFORD ACHIEVEMENT TEST"

9/64 - FORM X
5/65 - FORM W

*GRADE SCORES

STUDENT No.	PARA. MEAN. 9/64	PARA. MEAN. 5/65	SPELLING 9/64	SPELLING 5/65	LANGUAGE 9/64	LANGUAGE 5/65	ARITH. COMP. 9/64	ARITH. COMP. 5/65	ARITH. CONC. 9/64	ARITH. CONC. 5/65	ARITH. APPL. 9/64	ARITH. APPL. 5/65	SCIENCE 9/64	SCIENCE 5/65	GRADE SCORE AV. 9/64	GRADE SCORE AV. 5/65
1	70	90	90	84	86	101	62	86	57	64	72	67	52	69	70	80
2	76	68	72	54	63	77	60	64	48	51	53	72	54	62	61	64
3	70	80	70	67	57	63	51	66	72	82	67	67	56	63	63	70
4	84	99	72	90	75	80	82	117	85	114	113	85	100	118	87	88
5	68	72	68	68	73	**	86	115	96	99	74	67	72	102	77	87
6	74	99	62	64	64	89	72	60	57	66	74	60	72	65	69	72
7	89	107	70	74	88	104	68	92	82	105	67	83	75	98	77	95
8	64	***	66	***	66	***	64	***	44	***	49	***	50	***	58	***
9	86	107	84	82	106	108	78	89	82	105	91	85	77	108	86	98
10	68	74	64	67	62	70	48	45	72	57	74	60	77	85	66	65

*GRADE SCORES:
A SCORE OF 83 INDICATES FUNCTIONING IN THE THIRD MONTH OF THE EIGHTH GRADE;
A SCORE OF 104 INDICATES THE FOURTH MONTH OF THE TENTH GRADE; AND SO ON.

**STUDENT NOT AVAILABLE FOR TEST.
***STUDENT LEFT SCHOOL.

APPENDIX A

TABLE V

HIGH SCHOOL B

EXPERIMENTAL GROUP

"IOWA TEST OF BASIC SKILLS"

GRADES 8-9

9/64 - FORM 1
9/64 - ACTUAL G.P.= 9.1

5/65 - FORM 2
5/65 - ACTUAL G.P.= 9.9

STUDENT NO.:	VOCABULARY: 9/64	5/65	READING: 9/64	5/65	LANGUAGE: 9/64	5/65	WORK-STUDY: 9/64	5/65	ARITHMETIC: 9/64	5/65	COMPOSITE: 9/64	5/65
1	93	54	70	70	65	58	73	66	76	71	75	64
2	88	89	83	89	68	65	74	84	95	99	82	86
3	76	65	67	64	67	51	74	70	66	70	70	64
4	96	99	89	91	92	101	80	87	78	84	86	92
5	84	*	86	*	80	*	74	*	77	*	80	*
6	73	80	65	71	57	74	69	68	64	72	65	73
7	108	113	95	95	77	81	83	90	78	78	88	91
8	93	101	81	87	121	77	123	72	119	91	107	86
9	95	98	78	82	68	77	79	89	76	87	79	87
10	73	**	62	**	66	**	76	**	61	**	67	**
11	76	86	65	69	81	91	72	83	88	102	76	87
12	85	88	88	75	85	93	75	85	78	88	82	86
13	90	95	88	95	78	89	86	98	77	92	83	94
14	92	98	80	87	88	97	76	92	81	86	83	92
15	82	80	73	70	86	82	67	74	71	74	76	76
16	77	82	64	86	69	88	74	81	69	79	70	83
17	99	108	84	102	78	78	80	93	85	91	85	94
18	61	59	67	71	61	78	74	73	68	72	66	69

*STUDENT LEFT SCHOOL.
**STUDENT NOT AVAILABLE.

APPENDIX A

TABLE VI

HIGH SCHOOL B

CONTROL GROUP

"IOWA TEST OF BASIC SKILLS"

GRADES 8-9

9/64 - FORM 1
9/64 - ACTUAL G.P.= 9.1

5/65 - FORM 2
5/65 - ACTUAL G.P.= 9.9

STUDENT	VOCABULARY:		READING:		LANGUAGE:		WORK-STUDY:		ARITHMETIC:		COMPOSITE:	
No.	9/64	5/65	9/64	5/65	9/64	5/65	9/64	5/65	9/64	5/65	9/64	5/65
1	80	93	69	71	76	75	75	86	75	76	75	80
2	82	87	74	85	83	94	81	82	84	85	80	87
3	96	108	79	90	80	79	80	98	82	86	83	92
4	83	89	81	84	71	83	82	94	78	86	79	87
5	79	87	83	86	81	79	70	64	70	74	76	78
6	82	89	72	75	75	75	75	91	70	92	74	84
7	79	82	79	84	70	70	74	76	74	84	75	79
8	99	96	85	86	67	90	81	85	79	90	82	89
9	77	57	67	71	65	52	64	71	69	72	68	65
10	82	87	78	87	60	63	73	84	81	81	74	81
11	77	83	78	79	82	70	77	78	75	66	77	75
12	77	85	70	79	72	79	70	70	74	75	72	78
13	63	76	74	76	66	78	74	76	83	81	72	77
14	90	90	86	82	58	63	76	77	70	77	76	78
15	88	89	73	84	100	104	80	98	89	94	86	94
16	76	90	76	81	63	69	74	78	77	84	73	81

APPENDIX A TABLE VII

VSH IOWA TEST RESULTS

	9/64 V	R	L	W	A	C	1/65 V	R	L	W	A	C
EXPERIMENTAL GROUP SINCE FEBRUARY:												
STUDENT NO. 1							73	78	67	54	62	67
STUDENT NO. 2							18	40	39	32	43	34
							46/x	59/x	53/x	43/x	53/x	51/x
EXPERIMENTAL - CONTROL:												
STUDENT NO. 1	54	56	54	64	65	59	53	42	31	54	69	50
STUDENT NO. 2	98	60	121	90	92	92	85	53	119	80	83	84
STUDENT NO. 3	80	69	73	71	66	72	82	55	61	44	43	57
STUDENT NO. 4	50	60	63	63	58	59	68	40	70	48	39	53
STUDENT NO. 5	84	76	100	83	68	82	91	73	101	84	74	85
	7-3/8-0	6-4/6-0	8-2/7-3	7-4/7-1	7-0/6-6	7-3/7-2	7-6/8-2	5-3/5-3	7-6/7-0	6-2/5-4	6-2/6-9	6-6/57
CONTROL - EXPERIMENTAL:												
STUDENT NO. 1	91	83	80	75	79	82	95	79	78	76	46	75
CONTROL GROUP ALL YEAR:												
STUDENT NO. 1	42	42	49	39	39	43	44	30	37	36	35	36
STUDENT NO. 2	88	95	107	109	117	103	92	85	114	106	114	102
STUDENT NO. 3	89	77	98	74	73	82	75	45	78	63	68	74
STUDENT NO. 4	17	19	19	11	19	17	16	20	17	24	16	19
	5-9/6-5	5-8/6-0	6-8/7-4	5-8/5-7	6-2/5-6	6-1/6-3	5-7/8-4	4-5/6-0	6-2/5-8	5-7/5-0	5-8/5-2	5-5/55
CONTROL 9/64 - 1/65:												
STUDENT NO. 1	88	71	67	60	59	69	78	44	37	40	67	53
CONTROL SINCE FEBRUARY:												
STUDENT NO. 1							51	51	49	46	55	50
STUDENT NO. 2							123	120	92	90	71	99
							87/x	86/x	71/x	68/x	63/x	75/x
CONTROL - EXPERIMENTAL: (MATH ONLY)												
STUDENT NO. 1	16	15	26	25	30	22	22	35	27	23	20	25

KEY: MEAN/MEDIAN

APPENDIX A TABLE VII

VSH IOWA TEST RESULTS CONTINUED

5/65

	V	R	L	W	A	C
EXPERIMENTAL GROUP SINCE FEBRUARY:						
STUDENT NO. 1	77	97	102	68	84	86
STUDENT NO. 2	24	26	38	36	55	36
	51/x	62/x	70/x	52/x	70/x	61/x
EXPERIMENTAL - CONTROL:						
STUDENT NO. 1	30	36	52	46	68	44
STUDENT NO. 2	87	59	122	83	77	86
STUDENT NO. 3	72	35	71	45	49	54
STUDENT NO. 4	38	57	73	57	41	53
STUDENT NO. 5	90	82	106	88	79	87
	6-3/7-2	5-4/5-7	8-5/7-3	6-4/5-7	6-3/6-8	6-5/5-4
CONTROL - EXPERIMENTAL:						
STUDENT NO. 1	89	82	85	74	58	78
CONTROL GROUP ALL YEAR:						
STUDENT NO. 1	44	33	33	43	33	37
STUDENT NO. 2	90	103	107	119	104	104
STUDENT NO. 3	77	65	101	77	88	82
STUDENT NO. 4	19	16	17	14	22	18
	5-8/6-1	5-4/4-9	6-5/6-7	6-3/6-0	6-2/6-1	6-0/6-0
CONTROL SINCE FEBRUARY:						
STUDENT NO. 1	44	44	48	44	64	49
STUDENT NO. 2	121	105	96	113	90	105
	83/x	75/x	72/x	79/x	77/x	77/x
CONTROL - EXPERIMENTAL: (MATH ONLY)						
STUDENT NO. 1	17	13	28	14	30	20

KEY: MEAN/MEDIAN

APPENDIX B

GENERAL INSTRUCTIONS TO TEACHERS

FOR THE USE OF PROGRAMED INSTRUCTION

PURPOSE:

THE PURPOSE OF THIS RESEARCH STUDY IS TO DISCOVER THE BENEFITS THAT PROGRAMED INSTRUCTION MAY PROVIDE OVER THE CONVENTIONAL METHODS OF TEACHING. YOUR STUDENTS ARE CLASSIFIED AS UNDER-ACHIEVERS, OR SLOW STUDENTS. WE FEEL THAT PROGRAMED INSTRUCTION CAN HELP THESE STUDENTS RECOVER THE SENSE OF WORTH AND THE ACADEMIC PROGRESS NEEDED TO PREVENT DROP-OUTS. PERHAPS MOST IMPORTANT WE WISH TO SHOW THESE STUDENTS THAT REGARDLESS OF THEIR PAST EXPERIENCES WITH SCHOOL, THEY CAN LEARN AND THEIR LEARNING CAN BE FUN.

PROGRAMED INSTRUCTION:

PROGRAMED INSTRUCTION IS A RELATIVELY NEW CONCEPT IN EDUCATION. IT WAS DEVELOPED CIRCA 1958 BY DR. B. F. SKINNER, A PSYCHOLOGIST AT HARVARD UNIVERSITY. DR. SKINNER APPLIED SOME SOUND PRINCIPLES OF LEARNING TO THE PROBLEM OF TEACHING CHILDREN, AND PROGRAMED INSTRUCTION IS THE RESULT. THERE IS NO REAL NEED TO GO INTO WHAT THOSE PRINCIPLES ARE HERE. IN GENERAL PROGRAMED INSTRUCTION PRESENTS THE MATERIAL TO BE LEARNED IN SMALL, BITE-SIZED STEPS CALLED FRAMES. EACH STEP OR FRAME GIVES THE CHILD SOME INFORMATION ABOUT THE SUBJECT AND THEN ASKS HIM A QUESTION ABOUT THAT PIECE OF INFORMATION. THE CHILD IS REQUIRED TO MAKE A RESPONSE, USUALLY IN THE FORM OF A WRITTEN ANSWER OR FILLING IN A BLANK. THE CORRECT RESPONSE IS THEN REVEALED TO THE STUDENT IMMEDIATELY. IN THIS WAY THE CHILD IS REWARDED FOR MAKING A CORRECT RESPONSE. AT THE SAME TIME INCORRECT LEARNING IS PREVENTED.

ANOTHER FEATURE OF PROGRAMED INSTRUCTION IS THE VERY REAL BENEFIT OF ALLOWING EACH CHILD TO PROGRESS AT HIS OWN RATE OF SPEED. SINCE EACH OF THE CHILDREN HAS HIS OWN PIECE OF PROGRAMED INSTRUCTION, HIS PROGRESS IS NOT TIED TO THAT OF THE REST OF THE CLASS.

PROGRAMED AIDS TO PERSONALIZED EDUCATION:

'PROGRAMED AIDS TO PERSONALIZED EDUCATION' IS A TERM YOU WILL HEAR US USE FREQUENTLY. WHEN WE UTTER THIS PHRASE WE ARE TALKING ABOUT PROGRAMED INSTRUCTION. THE REASONS FOR THIS, WHEN KNOWN, ARE SIMPLE AND REASONABLE. ALL TOO OFTEN IN THE PAST THE WORDS PROGRAMED INSTRUCTION, OR WORSE YET, TEACHING MACHINES, HAVE CONJURED UP ERRONEOUS NOTIONS ABOUT A 'PACKAGE DEAL' OR 'INSTANT EDUCATION' (JUST ADD A STUDENT, LET SET FOR TWO SEMESTERS AND PRESTO -- INSTANT SCHOLAR!). THIS IS NOT TRUE AT ALL. PROGRAMED INSTRUCTION CAN BE EFFECTIVE ONLY WHEN USED BY AN EXPERIENCED TEACHER, A HUMAN BEING-TYPE TEACHER, WITH ADEQUATE TRAINING AND BACKGROUND. THIS IS NOT MEANT TO DISPARAGE THE CLAIMS OF PROGRAMED INSTRUCTION TO BE A SELF-TEACHING METHOD. IT IS. VALUABLE LEARNING CAN TAKE PLACE USING PROGRAMED INSTRUCTION IN ONE SMALL SUBJECT AREA BY ONE HIGHLY-MOTIVATED INDIVIDUAL. BUT WE ARE TALKING ABOUT STUDENTS WHO HAVE HAD SEVERE ACADEMIC PROBLEMS, AND WE ARE PROVIDING THREE OUT OF THE FOUR OR FIVE SUBJECTS THAT

HE MUST MASTER IN ORDER TO GRADUATE. YOU AS THE TEACHER USING PROGRAMED INSTRUCTION MUST BE PRESENT. WITHOUT YOU WE ARE QUITE SURE THE PROJECT WOULD FAIL WITH FLYING COLORS. SO, IN A VERY REAL SENSE, YOU ARE GOING TO TEACH, USING PROGRAMED INSTRUCTION AS AN AID, AN 'AID TO PERSONALIZED EDUCATION' JUST AS YOU USE A MICROSCOPE OR A FILM PROJECTOR AS AN AID. PROGRAMED INSTRUCTION AS WE INTEND IT IS MEANT TO BE USED AS A TOOL BY THE TEACHER, NOT TO BE DISHED OUT BY A KITCHEN HELPER-BABYSITTER.

THUS, WE HAVE SETTLED UPON OUR SELF-COINED PHRASE 'PROGRAMED AIDS TO PERSONALIZED EDUCATION' AS A MEANS OF DESCRIBING THIS TECHNIQUE. PERHAPS THE BEST WAY TO ILLUSTRATE WHAT WE MEAN IS WITH THIS QUOTE FROM EDUCATIONAL SURVEY:

> "PROGRAMED INSTRUCTION IS ONLY INSTRUCTION. THE TEACHER'S JOB IS TO PROVIDE EDUCATION. IF TEACHERS ARE NOT ABLE TO CULTIVATE IN STUDENTS THE ABILITY TO INTERRELATE KNOWLEDGE AND USE IT CREATIVELY, STUDENTS END UP BEING WELL-INSTRUCTED BUT UNEDUCATED ADULTS."

CLASSROOM PROCEDURE:

PERHAPS THE MOST IMPORTANT THING YOU CAN DO TO PREPARE TO USE PROGRAMED INSTRUCTION IS BY GOING THROUGH THE MATERIAL YOURSELF. LOOK IT OVER, USE IT THE WAY YOUR STUDENTS WILL BE USING IT. THIS WAY YOU WILL LEARN WHAT THIS NEW TECHNIQUE IS ABOUT, AND YOU WILL BE MORE READY TO HELP YOUR STUDENTS.

YOUR STUDENTS HAVE BEEN SUPPLIED WITH PROGRAMED INSTRUCTION MATERIALS CHOSEN BY YOUR SCHOOL ADMINISTRATION AND US. WE HAVE BASED OUR CHOICE PARTLY ON KNOWLEDGE, AND WHERE KNOWLEDGE WAS LACKING, ON EDUCATED GUESSES. YOUR EXPERIENCE WITH THESE MATERIALS WILL ADD CONSIDERABLY TO OUR KNOWLEDGE OF THESE MATTERS.

VERY SOON YOU WILL HAVE THE RESULTS OF INTELLIGENCE AND ACHIEVEMENT TESTS AND OTHER INFORMATION ABOUT THE STUDENTS WITH WHOM YOU HAVE BEEN WORKING. THEREFORE, THOUGH WE HAVE CHOSEN WHAT MIGHT BE APPROPRIATE FOR THE MAJORITY OF YOUR STUDENTS, YOU MAY FIND THAT SOME STUDENTS NEED DIFFERENT MATERIAL. AS THESE NEEDS BECOME CLEAR, TELL US ABOUT THEM AND WE WILL PROVIDE THE NEEDED MATERIAL IF IT IS AT ALL POSSIBLE.

AFTER INTRODUCING THE MATERIAL TO THE STUDENTS WE SUGGEST THAT YOU STEP BACK AND WATCH WHAT HAPPENS FOR A FEW DAYS. LET THE STUDENTS EXPLORE THE MATERIAL, LET THEM WORK WITH IT, AND LET THEM SHOW YOU WHERE CHANGES HAVE TO BE MADE. CHANGES WILL BE NECESSARY, THAT'S FOR SURE. BUT WE THINK THAT ONLY TIME WILL POINT OUT WHETHER THERE ARE ANY CHANGES THAT CAN BE RECOMMENDED FOR EVERY CLASS. AFTER A REASONABLE PERIOD OF ADJUSTMENT, TRENDS WILL BE NOTICED. THIS STUDENT HERE SEEMS BORED TO TEARS WITH HIS WORK. SO DOES THIS STUDENT, AND THIS ONE, AND THIS ONE TOO. IS IT THE FAULT OF PROGRAMED INSTRUCTION? THIS MAY BE A SIGNAL THAT THE MATERIAL CHOSEN IS WRONG OR A SIGNAL FLARE SENT UP BY THE STUDENTS THAT IT IS TIME FOR A CHANGE OF ACTIVITY. IN ENGLISH IT IS PERHAPS A SIGNAL THAT IT IS TIME TO GET OFF THE DULL OLD GRAMMAR LESSON AND ON TO AN EXCITING SHORT STORY. GOOD! LET THEM GO TO THE SHORT STORY. THEY'LL LEARN A GOOD DEAL FROM A SHORT STORY, AND THEY'LL BE ABLE TO SEE HOW A SKILLED WRITER USES GRAMMAR TO WEAVE AN INTRIGUING TALE. THEN, AFTER A DAY OR SO, BACK TO THE GRAMMAR AGAIN. IT'S THE SAME WITH SCIENCE. A TRIP TO THE MICROSCOPE,

OR DIPPING LITMUS PAPER, OR A HEATED DISCUSSION ABOUT THE RELATIVE MERITS OF OVERHEAD CAM SIXES VERSUS V-8 ENGINES NOT ONLY BREAKS THE MONOTONY, BUT ALSO ADDS VALUABLE LEARNING. SIDE TRIPS LIKE THESE DO NOT HINDER OUR RESEARCH WITH PROGRAMED INSTRUCTION, THEY ENHANCE IT.

THE INTRODUCTION OF OTHER STANDARD AND EVEN SOME NON-STANDARD MATERIALS OR PRACTICES IS ALSO ENCOURAGED. WE WOULD LIKE TO HAVE YOU.. DISCUSS ANY RADICAL DEPARTURE WITH US. A PERIOD OF FIVE MINUTES WITH HEADS ON THE DESK AND EYES CLOSED MIGHT BE JUST THE THING A STUDENT NEEDS TO DISCOVER HOW ACTIVE HIS IMAGINATION CAN BE. OR, IN A MORE EXTREME EXAMPLE, THE STUDENT WILL SEE HOW REST REVITALIZES THE BRAIN AS WELL AS THE BODY. PLEASE FEEL FREE TO BRING IN ANY OF THESE SO-CALLED 'SIDE TRIPS'. AS A TEACHER YOU HAVE VALUABLE TRAINING AND EXPERIENCE; IT WOULD BE A SHAME TO WASTE YOUR TALENTS AND IMAGINATION.

AS YOUR STUDENTS PROGRESS, YOU WILL NOTICE THAT ON MONDAY EVERYONE EXCEPT JOHNNY AND MARY ARE GETTING ALONG FAMOUSLY. JOHNNY AND MARY ARE STUCK. HAS PROGRAMED INSTRUCTION FAILED? NOT AT ALL. THIS IS WHERE YOU GET THE CHANCE TO DO SOME REAL TEACHING. LET THE REST OF THE CLASS GO BY THEMSELVES. YOU AND THESE TWO KIDS WHO ARE STUCK CAN SPEND THE ENTIRE PERIOD WORKING ON THEIR PROBLEMS. WHEN THEY ARE ROLLING AGAIN, TOMMY AND ELIZABETH WILL NEED YOUR HELP. BECAUSE PROGRAMED INSTRUCTION TEMPORARILY IS TAKING CARE OF THE REST YOU ARE FREE TO HELP THOSE WHO REALLY NEED YOUR HELP. AND YOU HELP THEM DURING THE REGULAR CLASSTIME TOO, NOT AFTER SCHOOL WHEN THEY WANT TO BE OUT PLAYING, AND YOU WANT TO KICK OFF YOUR SHOES AND REST.

PROGRAMED INSTRUCTION IS NOT INFALLIBLE. WHEN A STUDENT JUST CAN'T SEEM TO GRASP PI'S EXPLANATION OF INDIRECT OBJECTS, AND YOU CAN'T SEEM TO POUND IT IN EITHER, PLEASE FEEL FREE TO CALL UPON THE HELP OF CONVENTIONAL TEXTBOOKS OR ANY OTHER MEANS TO HELP YOU AND THE STUDENT. THEN RETURN TO THE PROGRAMED INSTRUCTION.

WHAT WE HAVE BEEN TRYING TO SAY HERE IS THAT WE EXPECT YOU TO USE PROGRAMED INSTRUCTION AS A BASE FOR YOUR TEACHING -- NOT AS THE ONLY MEANS. WE DON'T FEEL THAT YOU CAN USE ONLY PROGRAMED INSTRUCTION. YOU MUST USE OTHER THINGS; ELSE TWENTY YEARS FROM NOW WE'LL HAVE A GENERATION OF PROGRAMED KIDS RUNNING AROUND THE UNEMPLOYMENT OFFICE, AND ALL OF US WILL HAVE FAILED NOT ONLY THE RESEARCH, BUT WE WILL HAVE FAILED THE CHILDREN.

HOMEWORK:

GIVING THE STUDENTS A BROAD ASSIGNMENT TO WORK ANOTHER HOUR AT HOME IN THEIR PROGRAMED TEXTS MAY BE NICE, BUT IT IS JUST AN EXTENSION OF THE SCHOOL TIME INTO HIS HOME. THIS ASSIGNMENT MIGHT HASTEN THE TIME WHEN A STUDENT WILL COMPLETE A UNIT, BUT IT ALSO INTRODUCES THE DANGER OF EXTREME BOREDOM, AND EXTREME BOREDOM CAN BE WORSE THAN A MILD CASE OF RIGOR MORTIS TO A STUDENT, ESPECIALLY OF THE TYPE WE ARE DEALING WITH. WE SUGGEST THAT HOMEWORK BE MADE THE OPPORTUNITY FOR BOTH APPLICATION OF WHAT HAS BEEN LEARNED IN SCHOOL AND FOR FUN WHILE LEARNING.

IT HAS BEEN FOUND BY MANY THAT WITHOUT APPLICATION THE THINGS LEARNED BY ANY METHOD DON'T AMOUNT TO A HILL OF BEANS IF THEY ARE NOT APPLIED IN A VERY REAL AND A VERY PRACTICAL SENSE. HOMEWORK WOULD SEEM TO BE THE IDEAL SETTING FOR APPLICATION. A THEME OR A BOOK REPORT OR JUST A FEW PARAGRAPHS OF NONSENSE CAN POINT OUT TO YOU THE STUDENT'S WEAKNESSES IN GRAMMAR AND USAGE. THESE THINGS CAN BE FUN FOR THE STUDENTS TOO. FOR

SCIENCE, DURING THE TIME WHEN BOTANY IS BEING STUDIED, A COLLECTION OF DIFFERENT TYPES OF LEAVES OR PLANTS CAN REINFORCE WHAT HAS BEEN LEARNED IN SCHOOL. WHEN MEASUREMENTS ARE BEING PONDERED IN MATH CLASS, AN ASSIGNMENT TO MEASURE EVERYTHING IN A STUDENT'S ROOM WILL AT FIRST SOUND FUNNY, BUT IT WILL PROVIDE THE APPLICATION.

THERE ARE HUNDREDS OF OTHER MEANS OF APPLYING THE KNOWLEDGE GAINED IN SCHOOL WITHOUT IT SEEMING TO BE MERELY SCHOOL AT HOME. IF THIS IS DONE, THEN PERHAPS 'HOMEFUN' IS A BETTER TERM FOR HOMEWORK.

TESTING:

HERE AGAIN THE INTELLIGENCE AND ACHIEVEMENT TESTS ADMINISTERED BY US WILL HELP GREATLY. IT IS OF THE UTMOST IMPORTANCE THAT WE BOTH GAIN AS MUCH KNOWLEDGE AS POSSIBLE ABOUT THE STUDENTS WITH WHOM WE ARE WORKING.

SOME OF THE PROGRAMED INSTRUCTION MATERIALS HAVE EITHER BUILT-IN TESTS OR SPECIAL TESTS PROVIDED. USE THESE IF YOU WISH. SINCE THEY WERE DEVELOPED BY THE SAME PEOPLE WHO WROTE THE PROGRAM, WE HOPE YOU WILL USE THEM. BUT IF YOU FEEL THAT YOU CAN GET A BETTER IDEA OF HOW THE STUDENTS ARE DOING BY USING YOUR OWN TESTS IN ADDITION TO THESE BUILT-IN TESTS, BY ALL MEANS DO SO. YOU ARE THE ONE WHO MUST ENTER THE MARK IN THE RECORD BOOK. THEREFORE, YOU SHOULD DECIDE THE BEST WAYS TO TEST THE STUDENT'S GRASP OF THE MATERIAL. FEEL FREE TO USE OBJECTIVE TESTS, ESSAY-TYPE TESTS, OR A COMBINATION OF BOTH IF YOU WISH.

ADDITIONAL PROGRAMED MATERIALS:

EVEN THOUGH THE ART OF PROGRAMED INSTRUCTION IS RELATIVELY YOUNG, THERE ARE A NUMBER OF DIFFERENT TYPES OF MATERIALS AVAILABLE. IF YOUR STUDENTS, ONE OF THEM, OR ALL OF THEM, SEEM TO BE HAVING DIFFICULTY WITH THE TYPE OF PROGRAMED INSTRUCTION WE HAVE PROVIDED, WE WILL BE HAPPY TO HAVE YOU TRY SOME OTHER TYPE OF PROGRAMED MATERIAL. WE HAVE ALREADY FOUND THAT TO AN EXTENT SOME STUDENTS REACT DIFFERENTLY TO SOME TYPES OF MATERIAL. THE KEY IS TO MATCH THE RIGHT STUDENT WITH THE RIGHT MATERIAL. NO SET FORMULA HAS YET BEEN DEVELOPED TO GUIDE US. WE MUST EXPERIMENT WITH ALL THE TYPES AVAILABLE UNTIL WE FIND THE RIGHT ONE. IF, AT ANY TIME, YOU THINK THAT ADDITIONAL, SUPPLEMENTARY, OR ENTIRELY DIFFERENT MATERIAL IS NEEDED, ASK, AND WE WILL DO OUR BEST TO GET IT FOR YOU. THIS ASPECT OF YOUR INSTRUCTIONS IS EXTREMELY IMPORTANT. WE WANT TO KNOW WHICH TYPES OF MATERIALS FIT WHICH STUDENTS. WE WANT YOU AND THE STUDENTS TO BE HAPPY IN THIS PROJECT. SO, AT THE SAKE OF BEING REPETITIOUS, WE URGE YOU TO ASK FOR WHATEVER YOU NEED. IF IT'S AVAILABLE YOU WILL HAVE IT AS SOON AS POSSIBLE.

CONCLUSION:

THIS RESEARCH PROJECT HAS BEEN CAREFULLY AND PAINSTAKINGLY PLANNED AND THOUGHT OUT. BUT WE ARE WORKING WITH CHILDREN. WE MUST BEAR IN MIND THAT THE NEEDS OF THE CHILD MUST NEVER BE SACRIFICED FOR THE SAKE OF RESEARCH. HOWEVER, IF YOU WISH TO MAKE ANY SIGNIFICANT CHANGE, WE WOULD LIKE TO HAVE YOU DISCUSS IT WITH US. WE WILL BE MORE THAN RECEPTIVE TO SUGGESTIONS AND CHANGES THAT SEEM TO ENHANCE THE QUALITY OF EDUCATION YOU AND WE ARE PROVIDING FOR YOUR STUDENTS.

LET US KNOW YOUR FEELINGS. WE WELCOME THEM. ONLY BY WORKING TOGETHER CAN WE PRODUCE MEANINGFUL RESEARCH AND MEANINGFUL ADJUSTMENTS IN THE EDUCATION OF OUR CHILDREN.